

ABSTRACT.

The treatise is an attempt, for the first time in a
English language, to give a general conspectus of Indian
phonetic literature.

The introduction (pp. 1-21) gives a chronological

CRITICAL STUDIES

of the phonetic literature which have been
collected (cf. p. 49). Of these, 10 are absolutely new,

and 10 are old works.

IN THE

PHONETIC OBSERVATIONS

in the body of the treatise (pp. 22-306) is a

summary of Indian phonetic literature and in the works of
Siddheshwar Varma, etc. The treatise consists of eleven

INDIAN GRAMMARIANS.

Of these, the first four deal with the syllabification of
words. Chap. V. examines the opinions on doubling.

BY

SIDDHESHWAR VARMA.

Chap. VI. on the pronunciation of 'y' and 'y' in different
positions. Chap. VII. on 'r' and its bearing on
the syllable. Chap. VIII. examines the fundamental basis
of the Indian theory of syllabification, viz. Abhinidhāna

or phonetic criticism. Chap. IX. deals with unsyllabified
words in the living language. Chap. X. discusses
the opinions on the nature of accents. Chap. XI. describes

the various views on the nature of accents.

It is hoped that these opinions were on the whole
helpful to modern



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A B S T R A C T .

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The treatise is an attempt, for the first time in a modern language, to give a general conspectus of Indian phonetic literature.

The introduction (pp. 1-91) gives a chronological survey of Indian works on phonetics, 55 of which have been examined (cf. p.49). Of these, 16 are absolutely new, being MS works.

The main body of the treatise (pp. 92-306) is a critical examination of some of the phonetic opinions expressed in Indian phonetic literature and in the works of Pāṇini, Patañjali etc. The treatise consists of eleven chapters (for detailed plan of these chapters see pp. 30-32). Of these, the first four deal with the syllabication of sound-groups. Chap. V. examines the opinions on doubling. Chap. VI. on the pronunciation of y and ṛ in different positions. Chap. VII. on Svarabhakti and its bearing on the dialects. Chap. VIII. examines the fundamental basis of the Indian theory of syllabication, viz. Abhinidhāna or incomplete articulation. Chap. IX. deals with nasalization a striking fact in the living languages. Chap. X. discusses the opinions on the nature of accent. Chap. XI. describes the various views on quantity.

It has been shown that these opinions were on the whole sound, and that some of them may be helpful to modern linguistics (cf. pp. 32-33).

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Vājasaneyi Prātisākhya, Benares Sanskrit Series, 1893-1895.

LIST OF ABBREVIATIONS.

Vārṇ. or Vārṇa.

Vārṇa-ratna-dīpa.

Atharv. Prāt.	Atharvaveda Prātisākhya, ed. Whitney, 1862.
Bloch	La formation de la langue Marathe, by Jules Bloch, 1918, 1919.
BSOS	Bulletin of the School of Oriental Studies.
Chatterji	The origin and development of the Bengali Language, 1926.
Cunningham	Inscriptions of Aśoka, by A. Cunningham, 1877.
Cār. or Cārā.	Cārāyanīya.
Geiger	Pāli. Literatur und Sprache, by Wilhelm Geiger, 1916.
Gött. Gel. Anz.	Göttinger Gelehrte Anzeigen.
Hultzsch	Inscriptions of Aśoka, by E. Hultzsch, 1926.
IP	Indogermanische Forschungen.
Ind. Stud.	Indische Studien, ed. Weber.
JRAS	Journal of the Royal Asiatic Society.
Māṇḍū.	Māṇḍūkī.
MSLP	Mémoires de la Société de linguistique de Paris.
Pāṇ.	Pāṇini.
Pār. or Pārā.	Pārāśarī.
Pischel	Grammatik der Prakrit Sprachen, by R. Pischel, 1900.
Rāstrp.	Rāstrapālapariṣeṣā, ed. L. Pinot (Bibliotheca Buddhica), 1901.
Rg Prāt.	Rgveda Prātisākhya, ed. Max Müller, 1870.
Rkt.	Rktantravyākaraṇa, ed. A. C. Burnell, 1879.
Siddh.	Siddhānta.
Ś or Śik.	Śikṣā.
Śs	Śikṣāsaṃgraha, Benares Sanskrit Series, 1893.
Śkam.	Śikṣāsamuccaya, ed. C. Bendall (Bibliotheca Buddhica), 1897.
Taitt. Prāt.	Taittirīya Prātisākhya (Bibliotheca Sanskritica), 1907.

Vāj. Prāt.

Vājasneyi Prātisākhya, Benares Sanskrit Series, 1883-1888.

Varn. or Varna.

Varna-ratna-dīpikā.

Vedica

Vedica und Verwandtes, by T. Benfey, 1877.

Wackernagel

Altindische Grammatik (Vol.I.), by J. Wackernagel, 1896.

Yājñ.

India with a Yājñavalkya.

ZDMG

Zeitschrift der Morgenländischen Gesellschaft.

in the Rgveda, which dedicates two entire hymns¹ to speech. It mentions three stages in the development of language: (1) inarticulate speech (2) primitive articulate speech (3) language proper. As regards the first, it states² that three out of the four grades of speech are "deposited in secret, and move not, being inarticulate": the lowest grade of inarticulate speech, according to the explanation of the Satapatha Brāhmana,³ being the hissing of serpents, or the humming of insects etc., the next higher grade of inarticulate sounds being the notes of birds, and the third grade being the inarticulate speech of brutes. As regards the second stage, the Rgveda points out that the primitive articulations of speech were first employed by men in imparting names to objects,⁴ thus leading to the third stage, viz., language proper, which "was created by the wise,⁵ as men cleanse corn-flour in a cribble."

1. X.71 and X.125.

2. I-164-45.

3. IV-1-3-15.

4. X.71.1.

5. X-71-2.

INTRODUCTION x

The study of Phonetics was pursued in ancient India with an interest, which has few parallels in antiquity. The germs of this interest may be traced in the R̥gveda, which dedicates two entire hymns¹ to Speech. It mentions three stages in the development of language: (1) inarticulate speech (2) primitive articulate speech (3) language proper. As regards the first, it states² that three out of the four grades of speech are "deposited in secret, and move not, being inarticulate": the lowest grade of inarticulate speech, according to the explanation of the Śatapatha Brāhmaṇa,³ being the hissing of serpents, or the humming of insects etc., the next higher grade of inarticulate sounds being the notes of birds, and the third grade being the inarticulate speech of brutes. As regards the second stage, the R̥gveda points out that the primitive articulations of speech were first employed by men in imparting names to objects,⁴ thus leading to the third stage, viz., language proper, which "was created by the wise,⁵ as men cleanse corn-flour in a cribble."

1. X.71 and X.125.

2. I-164-45.

3. IV-1-3-16.

4. X.71.1.

5. X-71-2.

A strict cleavage between inarticulate and articulate speech may be open to question, for it is difficult to determine where inarticulate speech ends and articulate speech begins. Moreover, the creation of language by men, if strictly intended, may suggest that language was independent of natural development. With these reservations, the observation of the R̥gveda was an interesting contribution to the early history of linguistics.¹

A further development of this interest may be noticed in the Aitareya Brāhmaṇa, which attributes speech to Indra,² and compares it to the ocean,³ on account of its inexhaustible nature. It prescribes that the stotriya verses "should be recited in intermediate speech, which refines the soul"⁴ and its

1. There is another well-known passage (IV-58-3) in which speech, according to Patañjali's interpretation (cf. the introduction to his Mahābhāṣya) is compared to a bull, the sounds of which are attributed to three organs, viz. the lungs, the throat and the head. But as the hymn in question is dedicated to ghṛta, it is doubtful whether Patañjali's interpretation was relevant.
2. IX-2 vāg ghy aindrī cf. Taitt. S. VII-4-7. Burnell, Aindra School of Grammarians p.3.
3. XIII-21 vāg vai samudro na vāk kṣījate.
4. XII-13- taṃ madhyamaya vācā śamsaty ātmānam
eva tat samskurute.

prescription of the ⁿnyūṅkha pronunciation indicates that the study of phonetics had reached a considerably advanced stage even during this period (circa 800-1000 B.C.), if the traditional data of the Āśvalāyana Śrauta Sūtra¹ are based on the actual occurrence of the pronunciation in the time of this Brāhmaṇa. This pronunciation was prescribed during the recitation of certain verses on the 4th day of the Navarātra Ceremony. A single vowel was to be repeated 16 times in varied quantity and accent. Thus the final o of āpō in āpō revatīḥ kṣayathā was (1) first pronounced with a quantity of 3 moras and the high tone:- Ṓ; (2) then five times as a short unaccented vowel half Ō or Ō̌; (3) again like (1) i.e. Ṓ; (4) again five times like (2), i.e. Ō̌; (5) like (1), i.e. Ṓ; (6) three times like (2), i.e. Ō̌. So the final o of āpō in this particular recitation was pronounced as follows:- Ṓ Ō̌Ō̌Ō̌Ō̌ Ṓ Ō̌Ō̌Ō̌Ō̌ Ṓ Ō̌Ō̌.

1. VII.11 cf. Śaṅkara on Ait. Br. XVI.3; Keith on Old. p. 226.

The commentator (Āś Śraut. Sū. VII, 11) speaks of the half o here as "alauṅkika" i.e. not used in current speech (ardhaukāra-svarūpasyālaukikatvāt).

"alauṅkika" (1, 6, 1, 2, 3), "alauṅkika is a nyāsa nyāsa to a nyāsa" (1, 1, 2, 3, 3) iti, pāradakṛtīr oṃ, tatra bhavataḥ, naiva hi loke nānyasmin vade rāḥ okāro 'iti.

As regards the half-quantity of \bar{o} in $\bar{a}\bar{o}^x$, cf. Patañjali, Mahābhāṣya¹ (ed. Kielhorn: 1880), pp. 22, 117.

These data indicate that the study of phonetics was still subservient to the needs of the liturgy, but the minuteness of the details suggests that the interest for phonetics had reached a further stage of development.

This taste grew during the period of the Altareya Āraṇyaka, which describes various sounds in terms of different objects in nature.

1. Patañjali states in this passage that the Sātyamugri and the Rāṇāyaniya Schools of the Sāmaveda pronounced \bar{e} and \bar{o} as short, viz. of half quantity. According to Patañjali this pronunciation was the regulation of certain Prātisākhya (Pārsada) or phonetic schools of the Sāmaveda only: "neither in the world, nor in any other Veda, does there exist a half \bar{e} or a half \bar{o} ". In other words, the shorter quantity of \bar{e} and \bar{o} was only dialectical.

cf. footnote p. 3.

Nanu ca bhoś chandogānam sātyamugri-rāṇāyaniyā
ardham ekāram ardham okāram ca dhīyate "sūjāte e
śśvasūnrte" (Sām. V. 1, 5, 1, 4, 3) "ādhvaryo o ādrbhiḥ
sutām" (1, 6, 1, 2, 3), "sukrām te e anyād yajātām te
e anyād" (1, 1, 2, 3, 3) iti, pārṣadakṛtir esā tatra-
bhavatām, naiva hi loke nānyasmin vede ' rdha ekaro
'rdha okaro 'sti.

The following may be of interest:-

(1). It compares the consonants to the nights, and vowels to the days,¹ presumably owing to the superior perceptibility of the latter in normal speech.

(2). Again, the consonants are compared to the body, the voice to the soul, and fricatives to the breath.² The comparison of the consonants to the body was apparently due to their inferior perceptibility, but the exclusion of breath from the soul of speech may appear to be primitive, unless it was an error of omission, as the Prātisākhya³ include both breath and voice in the "sound-material" (anupradāna).

Nevertheless, the Āraṇyaka does not neglect breath, for it connects it with the fricatives in which breath is prominent. It ascribes to breath a position inferior to voice, because the former is more tangible.

(3). In another passage,⁴ the plosives are said to be a form of the earth, the fricatives of the atmosphere, and the vowels of the firmament. Here the comparative solidity of plosives presumably called forth the analogy of the earth; the predominance of breath in the fricatives, that of the atmosphere; and the superior perceptibility of the vowels

1. II-2-1. Cf. Keith, ad loc, whose translation has been followed.

2. Ibid. opt. cit.

3. Bṛ. Prāt. XIII-1, Taitt. Prāt. XXIII-2.

4. III-2-5.

recalled the brightness of the firmament.

(4) Again, in another passage,¹ the ficates are compared to breath, plosives to the bones, vowels to the marrow, and semi-vowels to flesh and blood. The first two comparisons are evident, but the last two are obscure, for the vowels, being more perceptible, should have been compared to flesh and blood, and not to the marrow. Perhaps the analogy of "support", as in the "bones" corresponding to the plosives, is continued in these two comparisons: the marrow was possibly conceived of as being the "support" of flesh and blood, and consequently the vowel, being the basic sound in the Indian theory of syllabication was compared to the marrow.

(5) But another remarkable passage² indicates that phonetics had reached a very advanced stage during this period (circa 800-700 B.C.). It gives us three theories of Syllabication, in connection with the definition of Samhitā. The following definitions of Samhitā have been given:-

(a) Samhitā was the interval between two syllables. This was rather indefinite, for it throws no light on the nature of the interval, and it suggests that the syllables in juxtaposition were independent unities. If this meaning was intended, it was a primitive theory of Syllabication.

1. III-2-2

2. III-1-5. For this date cf. Keith, I *ibid.* p. 26.

(b) Samhita was the interval by which the accent or the quantity of two syllables was distinguished. This was a more satisfactory definition, owing to inclusion of accent and quantity, which play an important part in syllabication.

(c) Samhita is a pronunciation of two syllables which are neither entirely separated nor united. This indicates a view of syllabication which will be generally accepted by modern Science. For the basic principle of syllabic division is relative, the hearer perceiving a break in the chain of prominence in connected speech. What may be the end of a syllable to the perception of one hearer, may be the continuity of the syllable to another hearer, though all hearers may be agreed as to where occur very prominent breaks in the chain of speech.

These observations, then, indicate how far advanced was the study of phonetics in India as early as 700 B.C.

Nature and Scope of "Śikṣā".

But the Aitareya Āraṇyaka does not give any designation for phonetics, the specific term for which has been "Śikṣā", and four stages in the development of its scope may be mentioned:-

(1) Originally, the term seems to have been restricted to rudimentary instruction in pronunciation, as the literal meaning of the word implies. This scope is first mentioned in the Taitt. Upaniṣad,¹ and

1. I-2.

included instruction in individual sounds, accent, quantity, and chanting of Vedic verses. This sense of the term has been pointed out by various commentators such as Viṣṇumitra,¹ Śāyana,² and Madhusūdana Sarasvatī.³

(2) In the next stage the scope of "śikṣā" was further developed into "general phonetics". We find the term used in this sense in the Vāj. Prāt.,⁴ which speaks of the sounds "prescribed by the śikṣā", and further specifies those sounds as treated in the Vāj. School. As will be presently shown, "śikṣā" implied "general phonetics", while "prātiśākhya" signified "applied phonetics". In the second stage, then, śikṣā emerged from a schoolmaster's vocation to those general principles of phonetics which were further applied by the Prātiśākhyas to the various Vedic texts with which they were concerned. It is a significant fact that Pāṇini's list of Kramadigana,⁵ which enumerates five subjects, keeps "śikṣā" apart from "krama" and "pada" which, therefore, were beyond the scope of śikṣā proper.

1. Rg. Prāt. (Benares Edition) p. 10:- śikṣā svaravarnopadeśakam śāstram.

2. Max. Müller: Hist. of anc. Skr. Litt. p. 113.

3. Prasthānabheda p.16 (Weber's Edition) cf.

Weber ad. loc.

4. atha śikṣāvihitāḥ: I-29 (Weber's Edition).

5. On Pān IV.2-61. (1) krama (2) pada (3) śikṣā

(4) mīmāṃsā (5) sāman. Cf. St. Petersburg Lexicon.

The important question now arises, whether we can at present identify any sikṣā text or texts which offered to the Prātisākhya the general principles of phonetics. The answer is No! so far as the sikṣās, as we find them in their present form, are concerned. Tradition ascribes the position of the Vedāṅga to the Pāṇinīya Sikṣā.¹ Thus Madhusūdana Sarasvatī states that the Sikṣā common to all the Vedas is the one propounded by Pāṇini in five sections, beginning with the words "atha sikṣam pravakṣyāmi" etc., while² Rāmakṛṣṇa in his introduction to Pāraskara Grhya Sūtra speaks of this Sikṣā as the "basic Śāstra"-mūlāgama.

There are indications, however, that the Pāṇ. Sik. was not the Sikṣā to which the Vāj. Prāt. refers:-

(a) Tradition ascribes the authorship of the Pāṇ. Sik., not to Pāṇini, but to Piṅgala, who was said to be "younger brother" to Pāṇini. Thus the opening verse of the Sikṣāprakāśa, a commentary on the Pāṇ. Sik., says "After expounding the Sūtras of Piṅgala, I shall explain his Sikṣā, which follows the opinion of Pāṇini" and then speaks of Piṅgala as "being directed by his elder brother (Pāṇini) and as being his follower in

1. Prasthānabheda p. 16.

2. p. 42 (ed. Simon) tathā ca mūlāgame:- "sikṣā ghrāṇam tu vedasya" etc. - a verse which occurs in Pāṇ. Sik., S's p. 372.

Grammar."¹ Now if Piṅgala's authorship of the Śikṣā be accepted - and there is nothing against the acceptance of the tradition - it is hardly likely that he lived earlier even than the Prātiśākhya. For, firstly, his copious treatment of classical metre indicates that he did not precede the Prātiśākhya, and secondly, the kernel of ^{at least some of} the Prātiśākhya being probably ante-Pāṇineyan (see page 46), and Piṅgala being admittedly post-Pāṇineyan, his date could not be earlier than the Prātiśākhya. Tradition is therefore unable to substantiate the fact that the Pāṇ.Śik. offered to the Prātiśākhya the principles of general phonetics. Nor are there any positive grounds for the supposition that the substance of this Śikṣā may have preceded the Prātiśākhya, for the same substance is common to several other Śikṣās as well, e.g. the Yājñ. Śik., the Nārada Śik., the Māndū. Śik., and the Pār.Śik. The only positive assumption for which there is considerable probability is that the substance common to these Śikṣās may have formed the original text in question.

1. SS p. 385:-

Vyākhyāya piṅgalācārya-sūtrānyādaḥ yathāyatham,

śikṣāṃ tadīyaṃ vyākhyāsyē pāṇinīyanusārinīm.

jyēṣṭha-bhrātṛbhir vihitō vyākaraṇe'nujanus tatra-

bhagavān piṅgalācāryaḥ. Śaḍguruśiṣya also speaks

of Piṅgala as younger brother of Pāṇini. Weber

Ind. Stud. VIII, 160.

(b) But we have also interesting internal evidence indicating that the Pāṇ. Śik. was not the prototype of the Prātisākyas. This internal evidence is *that* relating to the pronunciation of r, r̥ and l̥.

As regards r, all the Prātisākyas state that its place of origin is either the teeth, the roots of the teeth, or the teeth-ridge, as the following details will show:-

¹
Rg. Prāt. Roots of the teeth: or according to some authorities, the teeth-ridge.

²
Vāj.Prāt. roots of the teeth.

³
Atharv.Prāt. Roots of the teeth, or a point close to the teeth.

⁴
Taitt.Prāt. The middle of the front of the tongue touches a point close to the teeth.

⁵
The Vaidikābharana thus explains the designation of r as repha; "it is called repha because it is pronounced like the sound of tearing ('ripping') a piece of cloth". In other words it was a rolled sound and was therefore observed as a dental.

1. I-19,20. Cf. Max Müller ad. loc.

2. I-68.

3. I-28 and commentary. Cf. Whitney ad. loc.

4. II-41.

5. on Taitt. Prāt I-19 riphyate vipāṭyate vastrādī-
pāṭana-dhvanivad uccāryata iti rephaḥ.

¹
Rkt. The teeth or the roots of the teeth.

We see, then that according to all the Prātisākhya r was either dental or alveolar; but according to the Pāṇ. Śik., it was cerebral.²

Somewhat similar difference may be noticed regarding the pronunciation of r and l:-

Rg Prāt.³ both r and l velar (jihvāmūlīyā) - their place of origin being the root of the tongue.

Vāj. Prāt.⁴ r velar; l dental.

Atharv. Prāt.⁵ According to the commentary, both r and l velar.

Taitt. Prāt.⁶ both r and l alveolar.

Rkt.⁷ r velar; l not located.

We see, then, that none of the Prātisākhya speaks of r as being cerebral, which the Pāṇ. Śik.⁸ maintains. As regards l, the older and perhaps more correct opinion is expressed by the Rg and the Atharv.

1. 8 repho mūle vā (com: rephas tu dantyo danta-mūle vā).

2. syur mūrdhanya rturāḥ S'S p. 379. Cf. Whitney, ad. loc. Atharv. Prāt., Taitt. Prāt.

3. I-18.

4. I-65, I-69.

5. I-26 cf. Whitney ad. loc.

6. II-18.

7. 4. jihvāmūle X kr̥.

8. syur mūrdhanya rturāḥ S'S p. 379.

Prātisākhya, for they maintain it to be velar. But the Pān.Sik. holds it to be dental.¹ Moreover, it seems that this difference between the articulation of r and l, as maintained by the Pān.Sik., was not held by the older grammarians of the Pāṇineyan School. For commenting on Pān. I.1.9. both Kātyāyana and Patañjali² point out that a similarity between the articulation of r and l ought to have been laid down by Pāṇini in order that as Patañjali illustrates it, the lengthening of r or l in the combination of hotr + lkarah = hotrkarah or hotīkarah may be effected. It seems, then, that these grammarians followed the opinion of the Rg and the Atharv. Prātisākhya, according to which both r and l were velar sounds. The much later³ grammarian Bhaṭṭoji Dīksita slavishly records both the views side by side, viz. of Kātyāyana and of the Pān.Sik., without noticing the contradiction⁴ involved.

There are, however, three Siksās which prescribe the pronounciation of r r and l as maintained by the Prātisākhya. These (see next page)

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1. Ḍantya ltulasā smrtāḥ I bid. p. 379.
 2. Kāṭ-rkaralkarayoḥ savarṇavidhiḥ: Pat.kim prayojanam? akah savarṇe dīrgho yathā syāt.
 3. His date, according to Belvalkar (Systems of the Skr. Grammar: pp. 46-47) is 1630 A.D.
 4. On Pān. I-1-9:- rlvarṇayor mithaḥ savarṇyam vācyam, and rturasānam murdhā, ltulasānam dantāḥ.

These are the Vyāsa¹ Śik., the Yājñ.Śik.² and the Varn. Śik.³ Now the Vyāsa Śik. does not seem to have been the prototype of the Prātisākhya, as it admittedly⁴ follows the Taitt. Prāt. The Yājñ. Śik. in prescribing this pronunciation, actually quotes Vāj.Prāt. I-65. The Varn. Śik.⁵ seems to be a compilation, as a subsequent discussion will show.

Of the Śikṣās which prescribe the pronunciation in question in accordance with the view of the Pān.Śik are the Āpīśālī⁶ and the Car.⁷ Śikṣās. Now the Pān.Śik. mentions the country of Surāstra,⁸ corresponding to modern southern Gujrat, and at first sight it might appear as if the pronunciation in question of r etc.

1. XXIV-13-14:- madhyāntābhyāṃ ca tālau ye rephe
jihvāgramadhyataḥ, takāre dantamūleṣu jihvāgreṇ-
opari sprśet.
2. S'S p.33:- aṣṭau dantya lvarṇa-lakāra-sakāra-
tavargā iti, eko dantāmūliyo repḥaḥ, pañca jihvā-
mūliya r'kkau (Vāj.Prāt. I-65) kavargā iti.
3. S'S p. 119 r'varṇo' tha kavargasca jihvāmūliya
eva ca etc.
4. Lüders: Vyāsa Śik. p. 4 ff.
5. See page 59.
6. 21. rtṣrasa mūrdhanyaḥ.
7. Fol.2 mūrdhanyrturasā jñeya dantya ltulasāḥ
smṛtāḥ.
8. S'S p.380 yathā saurāstrikā nārī takrāṇityabhibhā-
sate Cf. V.Smith: Early hist. of India (1924) p.342.

was current in this part of the country, or somewhere in the adjoining territories. But this illusion vanishes when we note that the *Pañ. Sik.*¹ also, which prescribes the opposite pronunciation, gives a similar verse regarding Surāstra. The earliest available record of the cerebral pronunciation of r and ṛ may be noticed in the Varna-Sūtra of Candragomin,² the lower limit of whose date, according to Lieblich, was the seventh century A.D.³ It is possible that the later grammarians of the Pāṇineyan School and some of the Śikṣās borrowed this opinion from Candragomin, whose work exercised considerable influence on the later development of Indian grammatical literature. That both the dental and cerebral pronunciations of r and ṛ were actually current in certain areas of the country can not be doubted. For corresponding to Sanskrit groups r + t we have in some dialects tt and in others tṭ, while corresponding to Skr. ṛ + t we have in western dialects i u + t, in southern dialects a + t, and in Eastern aṭ. Thus (see next page)

1. S'S p.27: also Nārada S' p. 435, Māṇḍū S' p. 473.

2. Candra-Vṛtti (edited Lieblich) p. 515, Sūtra 6:-
mūrdhā rturāsānam.

3. Das Datum Candragomin's und Kālidāsa's Breslau, 1903, p. 11.

Vol. IV, Pāṇiniya Sik. ed. loc.

3. JAS VI-453.

4. S'S pp. 379, 385.

Thus in Eastern Asokan inscriptions and in Singhalese we have vattati, vatanu for Skr. varitta, - (cf. Modern Behari ḥate "he is") but in West Asokan, and some of the western Indian languages we have the dental group tt, e.g. vattati, Sindhi watanu.¹ It is not unlikely, therefore, that the Pān. Sik. was composed in an area connected with the eastern group of Indian languages, but as no definite geographical data are available from the Śikṣās, the matter is shrouded in uncertainty.

At any rate, the above data seem to indicate that the Pān. Sik. was not the prototype of the Prātisākhya.

The Pān. Sik. in a more concise form occurs in the Agni Purāṇa,² which, according to Wilson,³ was composed a little before the Muslim invasion of India. It has only 22 verses, while Pāṇini's name is not even mentioned therein. The Śikṣā as published in Benares Edition has 60 verses, and the beginning as well as the end refers to Pāṇini.⁴ It is possible, then, that the Pān. Sik. in its present form was composed later than the Muslim invasion, and was adopted by the more recent grammarians of the Pāṇineyan School. But the earlier grammarians of this school hardly give any definite indications that they followed

1. I owe the above data to Prof. R.L. Turner.
2. Poona Edition; chapter 336. cf. Weber Ind. Stud. Vol. IV. Pāṇinīya Śik. ad. loc.
3. JRAS VI-483.
4. S's pp. 379, 383.

this Siksā only. On the other hand, Kaiyyata's reference to the 11 kinds of accessory movement¹ in articulation indicates that he did not have the Pāṇ. Sik. in his mind, but possibly the Āpisali S. For the Pāṇ. Sik.² like the Taitt. Prāt.,³ classifies sounds on five principles, viz. accent, quantity, place of origin, effort (prayatna) and sound-material. But Kaiyyata mentions 11 kinds of accessory movement (bāhya-prayatna) alone, which include, among others, breath, voice, closure, opening and the three accents.⁴ Thus, while the Siksā considers accent, breath-voice material, (anupradāna) and articulatory movement as three different categories, Kaiyyata brings these under "external prayatna" - a very unsatisfactory treatment indeed. Now this classification of external prayatna - attributed to organs other than the main articulating organs, the tongue, the lips etc. - is

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1. On Pāṇ. I.1.9:- tatra pūrvam sprētādayaḥ catvāraḥ, pasāṇaṁ mūrdhani pratihate nivṛtte prāṇākhye vāyau vivārādayo bāhyā ekādāśa prayatnā utpadyante.
 2. S's p. 379 svarataḥ kālataḥ sthānāt prayatnānu-
pradānataḥ.
 3. XXIII.2. The Taitt. Prāt.'s classification is slightly different: instead of accent it mentions closure (samsarga).
 4. Siddh Kaumudī on Pāṇ. I.1.9 vivāraḥ samvāraḥ svāso
nādo ghoso 'ghoso' lapaṇāno mahāprāṇa udātto'
mudāttaḥ svaritas oeti.

given in the Āpisali S,¹ and as Āpisali is traditionally said to be older than Pāṇini (see page 75), Kaiyyata may have had this Śikṣā in his mind when he referred to the 11 kinds of external "prayatna".

1. 32. kālo vivāraḥ samvāraḥ svāsa-nāḍav aghoṣata
ghoṣo' lpaprāṇa-kālaś'ca mahāprāṇa-svarāś trayah
bāhyam karanam ahuṣ tān varṇanām varṇa-vedinaḥ.

This would give 12 kinds of external prayatna, for they include quantity (kāla) also. Perhaps Kaiyyata further reduced it to 11, or had another recension of the Śikṣā before him.

This "bāhya-prayatna" has also been mentioned by Candragomin (Candravṛtti p.516), but he gives only four kinds thereof, viz. vivṛta, samvṛta, svāsa and nāḍa. This classification possibly offered material to the Pāṇ.Śik. The eleven kinds of "bāhya-prayatna", however, are mentioned by Jinendra-buddhi in his Nyāsa (ed. S.C.Cakravarti p.56), whose date has been assigned to the 8th century A.D. (Belvalkar: Systems of Sanskrit Grammar p.38). His phraseology on this point (cf. e.g. sa eva prāṇo nāma vāyur ūrdhvam ākraman
mūrdhani pratihato yadā koṣṭham abhihanti etc. p.56) somewhat resembles Kaiyyata's (cf. footnote on page 17), and Kaiyyata seems to have followed it. But whether Jinendrabuddhi borrowed the idea (of these eleven kinds of external effort) from the Āpisali Śikṣā or from some other source is a matter for further investigation.

(3) In the above paragraphs we have considered the second stage in the development of the Śikṣā when it offered to the Prātisākyas the principles of general phonetics. But it should not be supposed that with the advent of the Prātisākyas the observation of the general principles of phonetics was stopped. On the other hand, the Prātisākyas seem to have further stimulated the interest for phonetics, and hence, side by side with the rigorous details of the Prātisākyas which were called forth by the need for strict accuracy in the pronunciation of Vedic texts, there developed a minute observation of phonetic phenomena in their pronunciation of Sanskrit. The Śikṣās, as they exist in their present form, are not mere summaries of the Prātisākyas. Many of them as will be shown, can claim a number of distinct contributions to phonetics. A few of these contributions, rarely to be met with in the Prātisākyas, may be mentioned:-

A. Minute details regarding the general conditions of correct pronunciation.

According to the Yājñ. Ś. these are:-

(a) sound health (b) calm temperament (c) freedom from nervousness (d) abstention from omission of sounds, overstress, sing-song and faltering tone (e) beginning and end of the speech to be consistently distinct (f) abstention from habits of roughness, projecting the lips, indistinct pronunciation, nasal twang, broken speech, and rigidity of the tongue (g) good teeth and lips¹. Among other essentials

śś pp.3-4. svasthaḥ prasānto nirbhīto varṇan uccared budhaḥ
nābhyahanyan na nirhanyān na gāyen na ca kampayet.
yathādāu uccared varṇan tathāiv aitān samāpayet.

.....
na karālo na lambosṭho nāvyaḥ na nūnāsikāḥ

gadgado baddhajihvaś ca na varṇan vaktum arhati.

prakṛtir yasya kalyāṇī dantoṣṭhau yasya śobhanau
pragalbhaś ca vinitaś ca sa varṇan vaktum arhati.

the Nārada Ś mentions a clear throat and recommends, on the authority of Audbraji, the cleaning of the teeth and the throat with a twig-brush (danta-dhāvana).¹

B. Minute details regarding the relation of the vowel and the consonant (see Chapter I). But for the data from the Śikṣās, this point would have remained much more obscure. It is important to note that for the explanation of all such subtle points the commentators on the Prātisākhya rely upon the Śikṣās, which have thus, proved guiding lights for advanced phonetics in India.

C. The nature of accent. While the Prātisākhya are rather obscure, the Śikṣās throw definite light on the nature of Vedic accent. Thus the Yājñ. Śik.² directly tells us that the Vedic accent was musical: "the seven musical notes mentioned in the science of music are exactly the three accents, udātta etc. in the Vedas."

The Śikṣās also give interesting observations on the teaching of accent, and the relation of accent and quantity (see Chapter X.)

D. Quantity. Several remarkable observations of the Śikṣās in this connection will be examined in Chapter XI.

E. Svarabhakti as an independent syllable after the Svarita accent (see pages 141 ff.).

F. The nature and quantity of Anusvāra and Raṅga, Chapter IX.

G. Further development of observations on Abhinidhāna, consonant-groups, and doubling, Chapters VIII and V.

(4) The fourth scope of the term Śikṣā, not necessarily developed in a chronological order, was its identification

¹SS p.443.

²SS p.1. gāndharva-vede ye proktāḥ sapta ṣaḍjādayaḥ svarāḥ, ta eva vede vijñeyās traya uccādayaḥ svarāḥ.

with the treatises on applied phonetics, viz. the explained Prātisākhya. Thus Viṣṇumitra¹ speaks of the Ṛg Prāt. as a Śikṣā Śāstra composed by Śaunaka, while the Ṛg Prāt.² speaks of itself as a Śikṣā of Sounds. It should be borne in mind that a hard and fast line between Śikṣā and Prātisākhyā was not possible. The authors of the Prātisākhya were themselves authorities on phonetics, and their minute observations on syllabication, accentuation etc. are distinct contributions to general phonetics. There was therefore, a close inter-action between Śikṣā and Prātisākhyā, leading to the advancement of both. But when the term Śikṣā was applied to the Prātisākhyā, it was done so in a secondary sense, as our next discussion will show. (extinct) Śikṣā of the

The nature and scope of the Prātisākhya. The Prātisākhyā, then, was a treatise on

The original, and perhaps more significant, term for the Prātisākhyā, was the Pāṛṣada, and the commentators³ sometimes speak of the Ṛg Prāt. as a Pāṛṣada. This name was said to signify that the treatise in question belonged to a social group (pariṣad) or groups in which, among other things, the general principles of phonetics were adapted to Vedic texts, by oral instruction or public discussion. The term Pāṛṣada indicates that for a long time these phonetic treatises were not put in writing. Hence the kernel of these works dates back considerably earlier than Yāska⁴ (circa, 500 B.C.) who mentions them.

¹Ṛg Prāt. (Benares Edition) p.10:-
atha ācāryo bhagavān śaunakah śikṣāśāstram kṛtavān.

²XIV - 30. nindanty akṛtsneti ca varṇa-śikṣam
śāstra ubha..... kṛtsnam ca vedāṅgam anindyam āṛṣam.

³e.g. Viṣṇumitra Ṛg Prāt. (Benares) pp.1. 10.

⁴1-17. Cf. Roth's remarks ad.loc. in his introduction, and Zur Litt. und Gesch. d. Vedas pp.13 ff.

The term Prātisākhya has been etymologically explained by Mādhava¹ as a treatise "belonging to each individual only (prati) branch or school (sākhā)". This derivation, however, is not satisfactory; for it might suggest the existence of as many Prātisākhyas as there were schools in the Vedas, and for this we have no evidence. The Vaidikābharṇa² gives the more probable suggestion that the "Prātisākhya" referred to a group of Sākhās, "just as the Rg Prāt. pertains both to the Sākala and the Bāskala Sākhās". The Vaidikābharṇa stoutly combats the view that the examples quoted by the Taitt. Prāt. but not available in the extant texts of the Taitt. Saṃhitā refer to the Jatā Pāṭha. These examples, it maintains, belong to other (extinct) Sākhās of the Samhitā.³ The Prātisākhya, then, was a treatise on help phonetics applied to a group of schools of a particular Veda. for all of them prescribe it to be dental or alveolar. Never The basis of the Prātisākhya, according to the Vaidikābharṇa⁴ and Uvāṭa⁵ was Sikṣā and grammar. Concerning

¹ Jñānendra Sarasvatī on the Siddhānta Kaumudī Pāṇ. IV. 3.59: prātisākhyaṃ bhavaṃ prātisākhyam iti mādhavaḥ.

² On Taitt. Prāt. IV-11. dvi-tri-sākhā-viśayatve' pi tad-asādhāraṇatayopapatteḥ, tathā bahvṛcanam sākala-bāskalakātmaka-sākhā-dvaya-viśayaṃ prātisākhyam prasiddham.

³ Ibid. opt.cit. Cf. Whitney. Taitt. Prāt. pp.184.185.

⁴ On Taitt. Prāt. I-21: sikṣā-vyākaraṇaṇam yad ayaṃ vivaraṇatmakah granthas tato' tra nātīva śabda-sāṅkoca iṣyate.

⁵ On Vāj. Prāt. I-169 sikṣā-vihitam vyākaraṇa-vihitam cāsmiṃ śāstra ubhayaṃ yataḥ prakriyate

its relation to Śikṣā, Uvāṭa points out that "sounds of the alphabet are taught in the world; the Rg Prāt. selects only those sounds of this alphabet which pertain to its own Śākḥā".¹ The Vaidikābharṇa² throws further light on the point by stating that the "sounds enumerated in the Śikṣās are common to secular and Vedic pronunciation, thus some Śikṣās mention 68 sounds and others 64 sounds, the Prātisākhya specify the sounds peculiar to their Vedic texts". Again as Uvāṭa³ says, "In one Śikṣā r is said to be cerebral, and in another, dental. The Śikṣās thus prescribe rules of pronunciation common to all the Śākḥās, but do not specify in which Śākḥā r is cerebral and in which it is dental. Now it is this specification which is made in the Prātisākhya". Unfortunately the Prātisākhya do not help us to determine where to locate the cerebral pronunciation of r, for all of them prescribe it to be dental or alveolar. Nevertheless, it will now be clear that the Prātisākhya presuppose a Śikṣā or Śikṣās of a general character. This is further corroborated by the fact that the Prātisākhya do not actually enumerate the sounds of the alphabet, as Pāṇini does. Thus the Taitt. Prāt.⁴ describes the sounds in this manner:- "Now the first nine are simple vowels", similarly the Rg Prāt.⁵:- "In the beginning there are eight simple vowels", without specifying what those vowels are.

¹Rg Prāt. (Benares) p.21. upadīste varṇa-samāmnāyo laukiko vidyate, tatra yāvanto varṇa aśyaṃ śākḥāyaṃ upayoksyante etc.

²On Taitt. Prāt. I-1. evam śikṣāsv api kvacit kvacit loka-veda-sādhārṇa upadeśa bhavanti aṣṭaṣaṣṭīm paṭhanty eke catuṣṣaṣṭīm athāpare.

³See Rg Prāt. (Benares p.17). cf. Max Müller ad.loc.

⁴I-2. atha navāditaḥ samānākṣarāṇi.

⁵I-1. aṣṭau samānākṣarāṇy aditaḥ.

The pre-existence of a Śikṣā also seems to be confirmed by the observation of the Atharv. Prāt.¹ that "the origin of accent is not seen in the Pada or the Samhitā texts". As the relation of the Pada and the Samhitā texts was the main scope of the Prātisākhya, the Atharv. Prāt. probably refers here to those wider principles of accentuation which were embodied in the Śikṣās.

To sum up, then, the scope of the Prātisākhya was the specification and adaptation of sounds, prescribed by the Śikṣā. When, therefore, the term Śikṣā was used for the Prātisākhya, it was so employed in a secondary sense.

But now comes a somewhat surprising point. It is the above-mentioned observation of the Vaidikābharana and Uvāṭa that the Prātisākhya were based on grammar as well. In fact the Vaidikābharana goes even further, and states that the Prātisākhya was predominantly grammatical. The reasons given by the Vaidikābharana are the following:- (1) the Taitt. Prāt. sums up the items of general phonetics (quantity, accent, breath, voice, syllabication) at the end (in XXIV-5), after the work is over. This indicates, says our commentator², that the work is not so much based on the Śikṣā: (2) it is based more upon grammar, for the Taitt. Prāt. referring to its 'predecessors' says that in their opinion all syllables should be pronounced in a monotone. Now by 'predecessors', says the Vaidikābharana, "is meant the grammarians who composed the basis (viz. grammar) of this Śāstra, i.e. the

¹ Taitt. Prāt. XIX-5. ayaś castrasya śikṣāḥ vyākaraṇa-
IV-109.

² śikṣā-ganopadistam tu kāryam nātra saṅgrhītam, vyākaraṇa-
pradhānatvāt prātisākhyaśya. On Taitt. Prāt. XXIV-4.

Also on XIX-5.

1859-102, 103, pp. 1011, 1012.

Prātisākhya. For it is grammarians who prescribe optional monotone in the recitation of Vedic verses (cf. Pāṇini I-2-34)¹. (3) The Taitt. Prāt. in another Sūtra² states that the kampa accent is not prescribed by the preceding Śāstra. Now by "the preceding Śāstra is meant grammar, by which kampa is not prescribed. In Śikṣā, however, it has been directly prescribed".

The arguments of the Vaidikābharana, however, do not seem to be adequate, for the mere use of "predecessors" does not prove that it necessarily referred to grammarians. There is no doubt that the data regarding the monotone and kampa are true of the grammarians of the Pāṇineyan School; but this may have been a mere coincidence.

Nevertheless, it is an important observation; for it reveals the weakness of Goldstücker's opinion that the Prātisākhyas were entirely different from grammar, and that to treat them as grammar was a fallacy³. Goldstücker's main argument seems to be that tradition never considered them to be grammar: while here we have the authority of Uvāṭa and the author of the Vaidikābharana who relate them to grammar. Moreover, there is no doubt that the Prātisākhyas take the ready-made word as the base, but, as Benfey⁴ has rightly pointed out, it was the grammatical form of words which

¹On Taitt. Prāt. XV-9. ekasruti-svarena prayuktavyam iti pūrveṣaṃ matam, pūrve vaiyākaranāḥ, etac chāstrasya mūlabhūtaṃ vyākaraṇaṃ kṛtavanto hi te.

²On Taitt. Prāt. XIX-5. asya śāstrasya mūlabhūtaṃ vyākaraṇaṃ pūrvasāstram ity ucyate. tasmin kampo na vidhīyate, sāksāc chikṣāyāṃ tu vidhīyate.

³Pāṇini: his place in Skr. Litt. pp.195-197.

⁴Gott. Gel. Anz. 1859-102, 103, pp.1011. 1012.

constituted the basis for the phonetic observations of the Rg Prāt. and, as he adds, the Prātisākhya are based on grammar of a very advanced stage. Again, the observation of the two commentators is further corroborated by the very first Sūtra of the Atharva Prāt.¹ which throws light on the basis of a Prātisākhyā. It says "the object (of this treatise is to describe) the characteristic features of the four parts of speech, viz. the noun, the verb, the prefix and the particle, in the Paḍa and the Samhitā Pāṭha". And although this statement betrays the influence of a later stage in grammatical studies, it is a well-known fact that the Prātisākhya take the Paḍa Pāṭha as their basis. Had their foundation been only Śikṣā, they would have treated only individual sounds in relation to the Samhitā Pāṭha. But as they start from words in their strictly grammatical form, i.e. including the suffix and the termination, their basis was partly, though not entirely, grammatical. Whitney² is therefore not right when he says that the Atharv. Prāt.'s mention of the four parts of speech was not relevant. But the Valdikābharana also stumbles into extremes by stating that the Prātisākhya are predominantly grammatical. For they handle grammatical problems only incidentally³, although, being partly based on and closely related to grammar, they gradually began to incorporate into themselves grammatical subjects⁴.

¹ I-1-1. graph is generally corroborated by (a) the phonetic

² On Atharva Prāt. I-1. Whitney is more accurate in another passage (Ibid. p.579) when he says that "the Prātisākhya are no complete grammatical treatises".

³ Max Müller: Hist. of anc. Skr. Litt. p.120.

⁴ Weber: Ind. Stud. IV-76ff; Lüders, Vyākṣa Śik. pp.102-3.

The object of the present treatise.

In the above pages we have traced the general trend of phonetic studies in India, with special reference to the leading features of the specific literature on the subject.

As regards the title of the work "Critical studies in the phonetic observations of Indian grammarians," the word "grammarians" is taken in a wider sense including works on grammar proper (such as Pāṇini's) and on phonetics.

The primary object of the present treatise is a critical and connected study in the phonetic observations of Indian grammarians. But its secondary object is also to show:-

- (1) that the phonetic views of Indian grammarians were not fanciful speculations, but, on the whole, sound and accurate observations;
- (2) that the language which they dealt with was not a dead language, as Benfey and Whitney supposed,¹ but a living language;
- (3) that this language, spoken by the educated classes,² was not a merely religious or imperial language 'superposed' upon the people, but rather a secondary language used by the educated classes, both for literature and conversation, general as well as technical.
- (4) that the accuracy of our grammarians' observations regarding the pronunciation of Sanskrit as defined in the above paragraph is generally corroborated by (a) the phonetic structure of Skr., particularly Sandhi (b) the evidence of inscriptions (c) parallel phenomena in the living dialects, and (d) the principles of linguistics;

¹Liebich: Pāṇini p.44.

²"Hochindisch" as Liebich calls it, Ibid. p.48.

- (5) that, therefore, the Prātisākhya were not "dead" in Prātisākhya" composed for "priests who had to be drilled into a proper recital of the sacred texts," and do not indicate "a time of degeneration after Pāṇini" as Goldstücker¹ supposes, but manifest a thrilling interest in the living phenomena of the language; (6) that our grammarians show not only accurate observation, generally, but have also observed some of the most important phonetic facts of Indo-Aryan languages, some of which may be helpful to modern philology; (cf. page 32) (7) that if the morphology of the language dealt with by Pāṇini was that of a living language, as Liebhich² has shown it from the evidence of grammatical structure, its phonology, as handled by Pāṇini and the Prātisākhya also referred to a living language.
- As regards the plan of the present treatise, it follows the recent methods of comparative Philology. Thus if the phonology or the morphology of a standard dead language as noticed by its Grammarians was actual, it should

¹The remarks of this close scholar of Skr. Grammarians on the Prātisākhya are so astounding, that they may be quoted here more fully:- Ibid. p.198:-

"In the Prātisākhya there is mechanism and death linguistic death reigns in these Sūtras

"they (i.e. the priests) had none of the spirit, learning and intelligence which Patañjali would wish" "..... between Pāṇini's living grammar and these dead Prātisākhya there lies a space of time sufficient to create a want"

²Ibid. pp.48 ff.

be not only confirmed by a copious number of occurrences in its structure, but must be reflected in the living dialects. The method followed, then, is twofold, direct and indirect. The former resorts to Skr. inscriptions, MSS etc. The latter is "dialectal", which has no doubt its limitations, especially when the opinions of grammarians are to be considered. For, firstly, some of the "living dialects" are also now dead languages, so that the actuality of their forms should be further corroborated by the parallel forms in the modern languages - an infinitely vast work; and, secondly, whenever grammarians step in, they tend to obscure the natural history of a standard language. Vendreys¹ aptly compares them to "the cold which produces the ice that restrains the flood of a stream." For the grammarians' motive is to guard the language against provincialism; and it may then be expected that the pronunciation prescribed by them would be different from the living dialects. But these drawbacks may be counter-balanced by some advantages. As regards the first, the task is facilitated by the results already established by the Philology of modern dialects, and as regards the second, our grammarians have fortunately observed important facts of the language which could not but be reflected in the dialects, and they have also given us minute details on mispronunciation of Sanskrit, which betray the actual dialectical tendencies of the people.

¹ *Language*
Ibid. p. 276.

will be shown that, on the whole, the diversity of opinion
The plan of the present treatise.

The treatise consists of eleven chapters:-

Chapters I-IV.

The first four chapters deal with the syllabication of sound-groups. The reason for devoting so much space to this item is that a fundamental basis of linguistic change is the variation in the affinity of one sound for another. For, as Tucker¹ has pointed out, "in language proper single sounds are not articulated independently, but in combination with others Hence a change of one sound in such a breath-group may induce a change in another sound of that group, not because of any difficulty in regard to the latter sound in itself, but because in this particular conjunction it becomes less congenial than some other." It will be shown in these chapters that the leading features of syllabication observed by Indian Grammarians have been a great fact in the history of the language - a fact² which distinguishes Indo-aryan from Avestan. Chap. I. states the basic principle of syllabication; Chap. II. examines the detailed rules of syllabic division; III. states the general principles of syllabic quantity, with reasons for its separate treatment; and IV. examines the detailed rules of syllabic quantity. Chap. V.

The main evidence for the accuracy of these rules on syllabication has been doubling, and so the opinions of our grammarians on doubling will be examined in Chap. V. It

¹ Natural History of Language, p.289.

² I owe this suggestion to a private communication from Prof. Meillet.

will be shown that, on the whole, the diversity of opinion was based on living facts. These new data would effect a solution of Whitney's difficulty when he remarked

Chap. "Thus is brought to an end the tedious subject of duplication, the physical foundation of which is identity, the obscurest, although the pains with which the Hindu Sākhināḥ have elaborated it, and the earnestness with which they assert their discordant views modern linguistic respecting it, prove that it had for them a real, or what seemed like a real, value."¹ After a long

Chap. VI. Another linguistic fact noted by them was India the pronunciation of y and v in different positions, corre and this will be considered in Chap. VI. Thus Nepali,

Chap. VII. An examination of some of the views on the origin Svarabhakti and their bearing on the dialects., as in

Chap. VIII. But the grand fundamental basis of all the above mentioned views was Abhinidhāna, examined in the + nasal Chap. VIII. (see page 109) will explain modern Indian

Chap. IX. Another fact in Indo-Aryan languages has been forms like nasalization. The nasalization of finals in Indian occur languages has been noticed by phoneticians from

Śākalya² to Daniel Jones³. These nasal sounds will be described in the 9th Chapter, under the heading as yamas "Anusvara". When anusvara arose before a fricative, soppa it was a case of abhinidhāna, based on the ground that in some dialects there existed an actual tendency for

¹Taitt. Prāt. p.313. observation of which led some

²Rg Prāt. I-26; Pāṇ. VIII-4-57. Yamas belonged to the

³He tells me in a private communication that Indians have a general tendency to nasalize final vowels.

Chap. X. Another important fact definitely pointed out by the Śikṣās was the musical nature of accent, dealt with in the 10th chapter.

Chap. XI. But by far the most remarkable proof of our grammarians' accuracy is their description of quantity, examined in Chap. XI.

It has been hinted above that some of the phonetic suggestions of Indian Grammarians may be helpful to modern linguistics. A few of these may be mentioned:-

(1) The short quantity of the anusvāra after a long vowel (see p. 304) will explain why some of the modern Indian vernaculars have long vowel without the anusvāra, corresponding to Skr. long vowel + anusvāra. Thus Nepali, Pūnjabi have mās, ṣiṇā mos for Skr. māmsa, but after the original short vowel the anusvāra has been preserved, as in Pūnjabi' vañh for Skr. vamśa

(2) The insertion of a plosive in the group fricative + nasal consonant (see page 209) will explain modern Indian forms like vitthal for Skr. viṣṇu, kitt for kṛṣṇa, and forms like aphe, tuphe (see p. 210) for Skr. asman, ṛasman occurring in Aśokan inscriptions.

(3) The divergent treatment of Skr. plosive + nasal consonant may well be explained by the observations on the yamas (see p. 133). Thus Pāli pañña for Skr. prajñā, but soppa for Skr. svapna may be explained on the ground that in some dialects there existed an actual tendency for strong nasality, the observation of which led some Grammarians to the view that the Yamas belonged to the preceding syllable, while the opposite tendency, which led to the opposite view, also existed.

(4) The divergent treatment of Skr. utsava as ucchava in Māgadhi but ussava in Ardhamāgadhi may be explained on the ground that in the former case (ucchava) the doubling of semi-finals was either parallel to, or possibly the effect of, the academic pronunciation of Skr., as, for instance, enjoined by the Cār. Śik. (see pp. 177 ff.) that the final consonants in Sandhi were to be doubled. It has been put into writing far later than the period of its origin; and it is impossible to determine how the stages of development each trunkless has undergone. The arguments have been hitherto based on (1) grammatical terminology used by the transmitters in question, (2) style, (3) authorities quoted. As regards the first point, Whitney has rightly pointed out that the appearance in a particular place of a later phase of grammatical phonology is not a necessary indication of its later composition, and he goes even so far as to say that discussions on this point are "nearly barren of positive results." In order that the chronological data may have even a relative value, many more things than mere terminology or style have to be taken into account. Nevertheless, considering the fact that much has been learned in the chronology of languages like Sanskrit and Latin is being kept up, although they have said little about themselves, the following pages may perhaps throw some light on the subject, although they do not claim any positive results.

Chronology of the Pāṇiniya

A definite starting-point for the chronology of the

Chronology of Indian Literature on phonetics.

Chronology in this line, like Indian chronology in general, is extremely obscure, and nothing can be asserted with certainty. The question in fact is even more difficult than chronology in several other lines, because phonetics being par excellence a subject for oral instruction, any particular treatise may have been put into writing far later than the period of its actual propagation; and it is impossible to determine how many stages of development each treatise has undergone. The main arguments have been hitherto based on (1) grammatical terminology used by the treatises in question, (2) style, (3) authorities quoted. As regards the first point, Whitney¹ has rightly pointed out that the appearance in a Prātisākhya of a later phase of grammatical phraseology is not a necessary evidence of its later composition, and he goes even so far as to say that discussions on this point are "nearly barren of any positive results." In order that the chronological data may have even a relative value, many more things than mere terminology or style have to be taken into account. Nevertheless, considering the fact that research in the chronology of authors like Kālidāsa and Bhāsa is being kept up, although they have said little about themselves, the following pages may perhaps throw more light on the subject, although they do not claim any positive results.

Chronology of the Prātisākhyas.

A definite starting-point for the chronology of the

1. Atharv. Prāt. p. 519.

Prātisākhya is the date of Patañjali, who admittedly¹ lived about 150 B.C. Now in Patañjali's Mahābhāṣya² I have discovered a passage from the Taitt. Prāt. on the definition of high and low accent. Patañjali not only cites the passage, he explains every term occurring therein, so that the passage can not be his own composition, and considering the fact that he refers in another passage³ to the Taittirīyas, it may be taken as very probable that he knew the Taitt. Prāt. The lower limit for the date of the Taitt. Prāt. may therefore be taken as 150 B.C.; while the upper limit for the kernel of Indian phonetic literature should go as far back as 800-700 B.C., the period of the Aitareya Āraṇyaka, which betrays a very advanced stage of phonetic study, as shown above; but the upper limit for the Prātisākhya proper was not earlier than Yāska, for the Bṛh Prāt. probably the oldest quotes him.⁴ The upper limit is therefore Yāska's date: 500 B.C.⁵ As regards the extinct Śikpā or Śikpās which were the prototype

1. Liebhich: Materialien zum Dhātupāṭha, p. 60.

Belvalkari: Systems of Skr. Grammar, p. 32.

Keith: The Veda of the Black Yaj. school, ol XVIII.

2. On Pāṇini, I-2, 29-30-1:

āyāno dāruṇyaṃ apatā khaṣy etyuccaib-karūṇi śabdasya,

anvavasargo nārdavan urutā khaṣy eti nicaib-karūṇi

śabdasya. He then explains the meaning of every term, e.g.

āyāno gātrāṇāṃ nigrahaḥ, dāruṇyaṃ svarasya dāruṇatā, etc.

The same passage occurs in Taitt. Prāt. XXII, 9-10.

3. Weber: Ind. Stud. XIII-442.

4. XVI-9.

5. Sarup: The Nighaṇṭu and the Nirukta, p. 54.

of the Prātisākhya, they were very probably synchronous with the period of the Aitareya Āraṇyaka, if not earlier, because even Yāska¹ refers to phonetic literature under the name of Pāradas. The chronology of the earlier but extinct phonetic literature should therefore range between 800-500 B.C., while that of the Prātisākhya proper between 500-150 B.C.

As regards their relative chronological position, the Prātisākhya may be placed in the following order:-

- (1) Rg. Prāt. (the oldest).
- (2) Taitt. Prāt. (kernel).
- (3) (a) Atharv. Prāt. (kernel).
(b) Vāj. Prāt. } nearly contemporaries.
- (4) Pāṇini.
- (5) Taitt. Prāt. (later phase of).
- (6) Atharv. Prāt. (later phase of).
- (7) Rkt. (of the Sāmaveda).

The above chronological order differs from the one laid down by Liebhich, Weber and Lüders. According to Liebhich,² only the Rg and the Vāj. Prāt. precede Pāṇini; all the other Prātisākhya, in his opinion, are posterior to him. His opinion regarding the Vāj. Prāt. is not improbable; the crude verbosity of the Vāj. Prāt. seems to be primitive before the concise style of Pāṇini. But the view regarding the posteriority of all the other Prātisākhya^(except the Rg) is open to question. As regards the Taitt. Prāt., Liebhich says³ that as this Prāt. is familiar with a few grammatical terms used by Pāṇini, it must be later than he. But though a few terms used by the Taitt. Prāt. and common to both, the substance and the treatment

1. Nirukta: I-17.

2. Zur Einfuhr. in die ind. ein. Sprachw. II pp. 38, 43, 46.

3. ~~Ind. op.~~ cit. ad loc.

of the Prātisākhya is very different from that of Pāṇini, as the following examples will show:-

(1) Anusvāra is a term used both by Pāṇini and the Taitt.Prāt.

(and in fact all the other phonetic treatises except the Atharv.Prāt.), and yet the use of this term by the Taitt.Prāt. in word-building is very different. It explains forms like rakṣāsi, jyotiṣi by prescribing the rule¹ that after ā i and u when followed by si or ai anusvāra is inserted, and then, in a succeeding rule² it states that forms like dadāsi, dadhāsi etc. are exceptions. Had it been post-Pāṇineyan, it would have found it more convenient to use Pāṇini's differentiation between si as a verbal termination and i as a nominal termination. In that case there could have been no question of an anusvāra before the former. Again, in connection with the word māsa- as distinct from māsa-, it states³ that the initial syllable mā when anudātta gets an anusvāra before g, and implies that it does not get the anusvāra when it is udātta, as in māsa-. Pāṇineyan Grammarians,⁴ on the other hand, would construct the word māsa- from the verb man, the n of which was said to be changed into anusvāra and then lengthened before g. And again,⁵ regarding the forms siṅha- tyā- and dyā- it prescribes that si ty and dy get the anusvāra when followed by h. But Pāṇini enumerates tyā- and dyā- among verbs, while he would have probably explained siṅha- as a modified metathesis of hiṅsa-.

1. XVI-14.

2. XVI-18.

3. XVI-8.

4. Upādī III-64. man jāne, atap so dhātor dīrghas' ca māsam piśātan.

5. XVI-26.

(2) Pāṇini¹ defines Saphitā as the closest contiguity of sounds; but the Taitt. Prāt. takes Saphitā in a wider sense. "Saphitā is that which is within the compass of a single breath"² i.e. "a breath-group", and it was said to be of four kinds, viz. word-groups, accent-groups, (individual) sound-groups, syllable-groups.³ In such cases there could be no question of borrowing from Pāṇini.

It may here be objected that the treatment of the Taitt. Prāt. differed from Pāṇini because it was a work on phonetics and strictly confined itself to that subject. But it should be borne in mind that Pāṇini's work did not exclude phonetics, just as the Taitt. Prāt. did not entirely exclude grammar from its scope. Had its kernel been post-Pāṇineyan, it would have shown some traces of Pāṇini's influence⁴ in its treatment of phonetic subjects like the Anuvāra, Saphitā, etc.

The fact seems to be that the grammatical terminology of the Taitt. Prāt. was among those transitional to Pāṇini, who perhaps incorporated these terms into his own system. The Taitt. Prāt., then, was not later than Pāṇini: its kernel was probably earlier.

While Meibich places the Taitt. Prāt. after Pāṇini, Lüders goes to the other extreme and suggests that it was "perhaps the oldest⁵ of all the Prātisākhya." It seems to be more probable, however, that (1) the later phase of the Taitt. Prāt. was posterior even to the Atharv. and the Vāj. Prāt., while (2) its kernel, though anterior to the latter, was posterior to the Rg. Prāt.

(1) I-4-109. (2) V-1. (3) XXIV-2.

(4) Cf. Keith: The Veda of the Black Yajus School, p. XI.

(5) Vyāsa Śik. p. 1.

As regards the first point, the Taitt. Prāt.

indicates a development of phonetic study which is much more advanced than any of the other Prātisākhya, as may be noticed in Chapters XVII-XXIV; cf., e.g. (a) the various opinions on the degree of nasality in the anusvāra and the nasal consonants (chap.VII) (b) the mention of new kinds or terms for accent, as vikrāṇa¹ and dhṛta² of the Śikṣā (c) the minute details on the various kinds of "pause"³ so copiously dealt with in later Śikṣā, (d) further rules of syllabication (as plosive + fricative, plosive + semi-vowel, semi-vowel + semi-vowel)⁴ not mentioned in any of the other Prātisākhya (e) details on the seven musical tones⁵ in their relation to accent, and the relation of tone and whisper⁶, the former of which is the main subject of the Nārada Ś. Had these remarkable theories been anterior to the other Prātisākhya, they would have been⁷ mentioned and possibly developed by them.

But there is a further interesting indication of the relative recency of the Taitt. Prāt. While all the other Prātisākhya, in their treatment of the lengthening of finals, take the Pada-Pāṭha as their basis, and so maintain the old tradition pointed out by Yāska,⁸ the Taitt. Prāt. in III-1 takes the reverse

1. XVII-6.

2. XVIII-3. ~~cf. pp.~~

3. XXII-13. cf. pp. 149 f.

4. See pages 120, 127.

5. XXIII-14.

6. XXIII, 5-12.

7. The Ṛg. Prāt. mentions the seven tones (XIII-17), but its treatment is indefinite.

8. I-17. cf. Ṛg. Prāt. Chapters VII-IX; Vāj. Prāt. III, 97-130; Atharv. Prāt. III, 1-25; Arnold, Vedic metre, preface xlii.

position, and states that a final long vowel, under certain conditions, is shortened in the Pada Pāṭha. In V-2, however, it takes the usual traditional Pada Pāṭha as the basis, stating that "the Pada Pāṭha, as it stands,¹ will be taken as the basis" (for the purpose of lengthening of finals, and other Sandhi rules). Why the Taitt. Prāt. breaks away from tradition in its third chapter and maintains it in its fifth chapter is a point on which the Vaidikābharapa throws very interesting light. It points out that "the real basis (prakṛti) is the Samhitā-pāṭha, the treatment of the Pada Pāṭha as the basis is designed to facilitate understanding, and in order to ward off the illusion, to which dull-minded persons are liable, that the Pada Pāṭha is the Veda, the undivided Samhitā is here (in III-1) taken as the basis."² One of the "dull-minded persons" was presumably the earlier commentator, the author of the Tribhāgyaratna, who speaks of the Pada Pāṭha as "eternal and immovable."³

The Taitt. Prāt.'s treatment of the Samhitā as the real and of the Pada Pāṭha as a conventional basis was more scientific and unique in the history of Prātisākhya literature. This is

1. Whitney, (V-2) misled by the Tribhāgyaratna, translates "yuktāt" as "combined with," which is admittedly unsatisfactory. The Vaidikābharapa gives a satisfactory paraphrase "yatībhūtaṁ śabdān āśṛitya."
2. On Taitt. Prāt. III-1. manda-matīnāṁ tu kaścid bhramah
prācyaṁ dhi bhakta-padātkaṁ veda itī tenānivāranārthan
tribhāvibhakta-rūpaṁ prakṛtim āśṛitya vibhāge hrasvatvaṁ
vidhīyate vibhakta-rūpaṁ tu prakṛtitvaṁ vyutpādane-
saukaryārthan āśṛiyate.
3. On V-2. kūṭasthād avicālinah.

a distinct indication of advancement in the methods of exposition, and hence this point further confirms the relative recency of this *Prātisākhya*.

It is difficult to determine which portions of the extant recension of the *Taitt. Prāt.* constituted its kernel. The following chapters seem to be older:-

Chap. II., in which purely phonetic phenomena are described, and few traces of Pāṇini's method are visible.

Chap. VIII., in which the treatment of Visarga-sandhi, as in 14-15, is more empirical than Pāṇini's.

Chap. XVI. Similar treatment of the Anuvāra and the praghyas.

The following chapters seem to be later accretions:-

Chap. I. (on definitions). It defines accent exactly as Pāṇini does.¹ But recency cannot be attributed to the whole of this chapter, for side by side with such rules, Sūtras like I-37 (vināśo lopah) and I-33-37 (crude definitions of short and long sounds, a short vowel being defined as that which has the quantity of a short a), do not seem to be post-Pāṇinayan.

Chapters XVII-XIX,² which give distinctly advanced theories as we find them in the *Sikṣās*.

1. Liebhich: *Ibid*, p.47. but by Max Müller.³ Moreover, the

2. of. Whitney, *Taitt. Prāt.* p.432.

³ *Taitt. Prāt.* (Oxford) Introduction, pp.18-24.

⁴ *Taitt. Prāt.* 2-11, 1-15.

(2) As regards the *Amavāra*, the *Rg Prāt.* first states that the *amavāra* is either a vowel or a consonant, places it earlier than *Pāṇini*, while *Lüders* is inclined to and then includes it among the "eight primitives." The consider it as posterior to the *Taitt. Prāt.* The question treatment of the *Taitt. Prāt.* is more precise and advanced, then arises as to the relative chronology of the *Rg* and the *Taitt. Prātisākhya*s. Now although it has been shown above that the *Taitt. Prāt.* gives indications of a development

(3) A similar advance may be noted in its treatment of articulation. For instance, while the *Rg Prāt.* simply states that *ā* is a velar sound, the *Taitt. Prāt.* points out and hence was far earlier. But even then, it indicates that in its articulation the lips and the jaws are neither posteriority to the *Rg Prāt.* For, firstly, the style of the *Rg Prāt.* indicates considerable traces of archaism, as *Maṅgala Deva Śāstrī* has shown from copious examples,¹ - an archaism which is hardly to be met with in the *Taitt. Prāt.* And, secondly, the *Taitt. Prāt.*'s treatment of the rudimentary items of phonetics is more precise and advanced, as the following data will show:-

Rg Prāt. I-11. "In the beginning there are eight simple vowels."

Taitt. Prāt. I-2. "In the beginning there are nine simple vowels."

The *Rg Prāt.* omits the vowel *ṛ*, and *Uvaṣa* explains it on the ground that *ṛ* does not occur in the *Rg Veda*, an error which has been pointed out by *Max Müller*.² Moreover, the *Rg Prāt.* itself, in a later verse,³ does mention *ṛ*, including it among velar sounds. The *Taitt. Prāt.*, however, includes it among the list of vowels in the very beginning.

¹ *Rg Prāt.* (Oxford) Introduction, pp.18-24.

² On *Rg Prāt.* I-11. *Prāt.* II-1. ³ I-18. II-36 etc.

⁴ *Pāṇini*: p.199.

⁵ The metrical style of this *Prātisākhya*, however, may presumably be traced to an earlier stage, in which its kernel was composed in the prose or *sūtra* style, being the first in which works of this class were composed.

As regards the Atharv. Prāt., Weber¹ is of opinion

(2) As regards the Anusvāra, the Ṛg Prāt. first states¹ that the anusvāra is either a vowel or a consonant, and then² includes it among the "eight fricatives." The treatment of the Taitt. Prāt. is more precise and advanced. It mentions only six fricatives,³ and keeps the anusvāra as a separate category.

(3) A similar advance may be noted in its treatment of articulation. For instance, while the Ṛg Prāt. simply states⁴ that a is a velar sound, the Taitt. Prāt. points out that in its articulation⁵ the lips and the jaws are neither brought very near each other, nor very much separated. Again, while the Ṛg Prāt.⁶ merely states that ṭ is a cerebral, the Taitt. Prāt.⁷ specifies that "in a sound of the ṭ-class the tip of the tongue is rolled back against the 'mūrdhan'." Similarly for several other sounds.

If, therefore, the anteriority of the Taitt. Prāt. to Pāṇini be accepted, that of the Ṛg Prāt. would then be even more probable. Goldstücker⁸ argues for the posteriority of the Ṛg Prāt. to Pāṇini by stating that "the Ṛg Prāt. is infinitely more complete than Pāṇini," basing his arguments on its longer details, e.g., on the Sandhi of a and ṇ and the lengthening of finals. But he has ignored the fact that the so-called exhaustiveness of the Ṛg Prāt. is only cataloguing of individual words; its treatment being almost exclusively empirical, and should therefore belong to a more primitive period.⁹

¹ I-11. Stud. IV.-79. ² I-12. ³ I-9, I-18.

⁴ I-18. Catuṣṭay pa. ⁵ II.-12. nānakhyāto. ⁶ I-19, anipātany.

⁷ II.-37, cf. Taitt. Prāt. II.-13, 14, II.-36 etc.

⁸ Pāṇini: p.199. ⁹ IV.-120.

⁹ The metrical style of this Prātisākhya, however, may presumably be traced to an earlier stage, in which its kernel was composed in the prose or sūtra style, being the form in which works of this class were composed.

As regards the Atharv. Prāt., Weber¹ is of opinion that it is "the most systematic and therefore the latest of the Prātisākhya." But it should be borne in mind that in spite of its superior treatment it does not seem to be much later than the Vāj. Prāt. In fact there are indications that its kernel was possibly even earlier than the Vāj. Prāt. For, firstly, it points out in the very beginning its traditional object as a Prātisākhyā,² viz. the relation of Pada and the Saṃhitā Pāṭha. The Vāj. Prāt.³, however, mentions its object as being the treatment of "accent and Sandhi (samskāra)" - indicating a little deflection at least from the way of putting the traditional object. And secondly, the Vāj. Prāt.⁴ attributes to Śaunaka the opinion that a plosive followed by a fricative (of a different class) becomes a breathed aspirated consonant, e.g. in samyakh-sravanti. Now this rule (without, however, the reservation 'of a different class') occurs in the Atharv. Prāt.,⁵ and as tradition ascribes the authorship of the Atharv. Prāt. to Śaunaka,⁶ it is not unlikely that the Vāj. Prāt. refers here to the Atharv. Prāt. Nor can this opinion be referred to Śaunaka, the traditional author of the Ṛg Prāt., for there⁷ it is spoken of as "the opinion of some authorities." It is probable, therefore, that the Atharv. Prāt. and the Vāj. Prāt. were nearly contemporaries. To speak of the Atharv. Prāt. definitely as "the latest" Prāt., without any positive evidence, would be over-elaborating a merely relative chronology.

¹ Ind. Stud. IV.-79.

² I.-1 Caturṇaṃ padajātanaṃ nāmākhyātopaṣarganipātanaṃ sandhyapadyau rūpaṃ prātiñam.

³ I.-1. svara-samskārayoḥ chandaḥ si niyamaḥ. ⁴ IV.-120.

⁵ II.-6. ⁶ Note the colophon of the Atharv. Prāt. (Whitney's Edition) iti śaunakīya-caturādhyāyikā.

⁷ VI.15. ūṣmodayaṃ prathamam sparsam eke dvitīyam āhur apadāntabhaṣam.

CONCLUSION.

As regards the R̥ktantra(Vyākaraṇa, the "Prātisākhya" of the Sāmaveda, Burnell¹ has adequately shown that it is post-Pāṇineyan. And yet it does not seem to be a very recent production: it was possibly composed when Sanskrit was a spoken language, for it speaks of Skr. as bhāṣā, unless it merely imitates Pāṇineyan phraseology. Thus about the formation of svairiṇī, akṣauhiṇī, it says² that in bhāṣā, the simple vowels in these words become the diphthongs ai and au (by Sandhi) when the syllable ṇī follows. Again, it makes the interesting observation³ that in bhāṣā the finals of pra and apa are lengthened before vr in the sense of "closing or guarding" as in prāvṛṇute (otherwise prāvṛṇūtē rtvījam). Its contribution to quantity will be examined in the 11th chapter.

The same may be said of treatment. Hence it is not necessarily "most probable"¹ that the Prātisākhyas are older than Pāṇini.

As regards (4), an example may illustrate the possible influence of Pāṇini on the later phase of some of the Prātisākhyas. Pāṇini uses the genitive case to indicate the substitution of one sound for another. But the Vāj. Prāt. nearly always uses the accusative, and so prescribes its² use. The same Prātisākhyā, however, on two occasions uses the genitive case in this sense, and gives another prescription to this effect, using exactly the same words as Pāṇini.³

¹ Preface: p.1v. Keith: The Veda of the Black Yajus School.

² 96. bhāṣāyaṃ ṇī-parayoh. Burnell. JRAS, 1918, p.619.

³ 212. dīrghaṃ bhāṣāyaṃ prāpavṛṇotau saṃvarāṇe.

³ saṃsthī sthāne yoga (1.136) Pāṇ. 1.1.49.

CONCLUSION.

The above discussion leads to the following conclusions:-

- (1) Patañjali knew the Taitt. Prāt.
indicates the later influence of Pāṇini.¹
- (2) Of the Prātisākhya, the Rg and the Taitt. seem to be the oldest.
The only advance made by the above inquiry, then, is the discovery of the passage from Patañjali's Mahābhāṣya.
- (3) The Prātisākhya seem to be essentially older than Pāṇini.
(cf. p.35). This passage gives us a definite starting-point
- (4) Portions of the Taitt., the Vāj. and the Atharv.
for the chronology of the Prātisākhya.

Prātisākhya bear the stamp of recency, and possibly the influence of the Pāṇineyan School.

The last three conclusions, however, cannot be maintained without reservation. For their evidence rests mainly on style and treatment. As regards the former, two contemporary persons may use styles with a varying degree of diffuseness or precision. Thus the Vāj. Prāt. need not be earlier than Pāṇini on the ground of its inferior style.

The same may be said of treatment. Hence it is not necessarily "most probable"¹ that the Prātisākhya are older than Pāṇini.

As regards (4), an example may illustrate the possible influence of Pāṇini on the later phase of some of the Prātisākhya. Pāṇini uses the genitive case to indicate the substitution of one sound for another. But the Vāj. Prāt. nearly always uses the accusative, and so prescribes its² use. The same Prātisākhya, however, on two occasions uses the genitive case in this sense, and gives another prescription to this effect, using exactly the same words as Pāṇini.³

¹ As maintained by Keith: The Veda of the Black Yajus School, Vol. I, clxxi; Macdonell, JRAS, 1916, p.619.

² Liehich, op. cit., p.41. As regards Atharv. Prāt.,

² I. 133, but cf. Pāṇ. I.1.49.

³ sasthī sthāne yogā (I.136) Pāṇ. I.1.49.

Chronology of the Vājas.

The use of the genitive case in the Vāj. Prāt., then, indicates the later influence of Pāṇini.¹

The only advance made by the above inquiry, then, is the discovery of the passage from Patañjali's Mahābhāṣya (cf. p.35). This passage gives us a definite starting-point for the chronology of the Prātisākhya.

Difficult to determine in which of these texts originally appeared. Few of them have any commentaries, and when they have, most of them are obscure and carelessly written. But the greatest difficulty lies in the corruption of their text. The same verses on the same subject appear in many places, sometimes irrelevantly and without a plan, sometimes unnecessarily repeated, and so it becomes almost impossible to judge what the original text of a particular Vaj. was. A few Vaj. of the Vait. School are an exception, as they are written on a very consistent plan; but the scarcity of chronological and geographical material characterizes these Vaj. as well. None of them contain a number of very valuable and striking phonetic observations not available in the Prātisākhya; they were really short Vaj. or rather on certain points in phonetics, to some of which the common material of the "general" Vaj. was subsequently added, in order that they might be introduced for class instruction in the schools. We shall therefore have to be contented with a general knowledge of these Vaj., pointing out the geographical or chronological material wherever

¹ Liebich, op. cit., p.41. As regards Atharv. Prāt., cf. Ibid., p.45.

Chronology of the Śikṣās.

While the chronology of the Prātisākhya is obscure, that of the Śikṣās is infinitely more obscure. Very few of them quote any authorities or name any localities, and if they are mentioned, some of them are found in several Śikṣās, so that it becomes difficult to determine in which of them these data originally appeared. Few of them have any commentaries, and when they have, most of them are obscure and carelessly written. But the greatest difficulty lies in the corruption of their text. The same verses on the same subject appear in many Śikṣās, sometimes irrelevantly and without a plan, sometimes unnecessarily repeated, and so it becomes almost impossible to judge what the original text of a particular Śikṣā was. A few Śikṣās of the Taitt. School are an exception, as they are written on a more consistent plan; but the scarcity of chronological and geographical material characterizes these works as well. Many of them contain a number of very valuable and striking phonetic observations not available in the Prātisākhya; they were really short Monographs on certain points in phonetics, to some of which the common material of the "general" Śikṣā was subsequently added, in order that they might be introduced for class instruction in the schools. We shall therefore have to be contented with a general conspectus of these Śikṣās, pointing out the geographical or chronological material wherever

any is available. Generally speaking, however, most of the Śikṣās as they exist in their present form bear the stamp of recency. Some of them quote or closely follow the Prātisākhya, while others propound opinions which betray Prākṛit influence.

There is a large number of extant Śikṣās. I know of as many as 65. Of these I have actually examined 50, viz. 31 published in the Benares Edition of 1893 (Śikṣāsaṃgraha), 16 MS works in the Madras¹ Govt. Oriental MSS Library, and 3 MS works belonging to the Bhandarkar Oriental Research Institute, Poona. Many of these Śikṣās, however, are mere catalogues of certain sounds in the Vedas, and contain very little matter of any general interest for linguistics. For instance, the Māṇḍavī Ś. gives a list of words in Yajurveda containing the consonant p; the Śamāna Śikṣā (Mad.MS. No.977) catalogues the elisions of the Visarga in the R̥veda; the Vilāṅghyam (No.960) enumerates words in the Yajurveda with a final a, ai, o, au; the Padakārikāratnamālā (No.921), attributed to Śaṅkarācārya, has forty chapters, and among other similar lists, contains an index of Vedic words with a final p. Even more famous Śikṣās like the Bhāradvāja and the Siddhānta Śikṣā are on the whole mere catalogues of words containing different sounds in alphabetical Śikṣā proper, and as it has been found in the recensions,

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1. Unfortunately the Madras Govt. does not lend MSS. only copies of those ^{MSS} were sent to me.

order, and were presumably prepared to insure accuracy in Vedic pronunciation, or to facilitate research work. Nevertheless, even these minor Śikṣās do not differ from several portions of the Prātisākhya themselves, which are mere catalogues of words, cf. for instance Chaps. VII-IX of the Rg Prāt. which enumerate lengthened finals, and similar chapters in the other Prātisākhya. These minor Śikṣās illustrate the way in which the Prātisākhya seem to have been built up - a gradual addition of material, general as well as particular.

The extant Śikṣās may be classified as follows:-

1. The "general" Śikṣā.
2. The Śikṣās of the Rg Veda.
3. " " " " White Yajur Veda.
4. " " " " Black " "
5. " " " " Sāma " "
6. " " " " Atharva " "

(1) Particulars of the "general" Śikṣā, called the Pāṇinīya Śikṣā, have been given above (pp. 9ff). It has been shown that this Śikṣā was not the prototype of the Prātisākhya, and that it is a more recent work. Nevertheless, it may be designated the "general" Śikṣā, as it has enjoyed a leading position among the extant Śikṣās owing to its complete character as a Śikṣā proper, and as it has been found in two recensions, one belonging to the Rg Veda, and the other to the Yajur Veda (both ed. Weber, Ind. Stud. Vol. IV.).

It has dominated the Pāṇineyan school of grammarians, who quote this Śikṣā more often than any other, while the portion common to this and the other Śikṣās has possibly been borrowed from this Śikṣā.

(2) There are very few extant Śikṣās of the Ṛg Veda. Of these the Svara-vyañjana Śikṣā will be examined in Appendix A (see pp. 91/2). It will be shown there that it actually quotes the Ṛg Prāt., and that it is post-Pāṇineyan. Another Śikṣā, viz. the Sāmāna Śikṣā, is of minor importance, and has been noted above (p. 49).

(3) As regards the ^{White} Yajur Veda, the Carana Vyūha¹ mentions five Śikṣās, though it does not name them. The Pārasarī S names eight Śikṣās² which may be described as follows:-

(a) The Yājñavalkya S, the most complete among the Śikṣās of the White Yajur Veda, has been connected with Yājñavalkya, presumably the founder of the Vājasaneyi school³. His name has been mentioned

1. (ed. Weber) 24. mantra-bhrāntiharap caiva śikṣānam pañcakam tathā.

2. SS p. 60:-

Yājñavalkyī tu vāsiṣṭhī śikṣā kātyāyanī tathā
parāśarī gaṅgāmī tu māṇḍavyāsmogha-nandinī, pāṇinī
sarva-vedeṣu sarva-śāstreṣu gīyate, vājasaneyi-
śākhayām tatra māṇḍyandinī smṛtā.

3. Introduction to Pāraskara Grhya Sūtra p. 70.

three times in the main body of the work¹, "the wise Yājñavalkya has propounded these rules of 'caste and colour' (of accent), quantity, metre, their authors and deities." From these three passages it appears that Yājñavalkya is not claimed here as the author of the text in its present form. On SS p.2, however, is mentioned "Somasārmāṇa's" opinion² on quantity. Now Somasārmāṇa is a comparatively recent name: it occurs, according to the St. Petersburg Lexicon, in the Viṣṇu Purāṇa and the Pāñcatantra, and if he is the real author of this Śikṣā, the upper limit of his date should not be earlier than the 5th century A.D. Moreover, there are traces of modern Hindu views in this work: thus the plosives are said to pertain to the God Saturn (Śanaīścara).³

As regards its lower limit, Uvāṭa quotes this Śikṣā in his commentary on the Vāj. Prāt.⁴ Now Uvāṭa

1. SS p. 3 vaṇo jātiś ca matrā ca gotraṃ chandas ca daivatam, also pp. 17, 35. etat sarvaṃ samākhyātaṃ yājñavalkyena dhīmatā.
2. nimeṣo matrākālāḥ syād vidyut-kāletī cāpare akṣarātulya-yogatvān matih syāt soma-sārmāṇaḥ.
3. SS p. 32. pañcaviṃśati sparsāḥ kṛṣṇāḥ vyākhyātāḥ śanaīścara-daivatvāḥ.
4. IV-163. tathā coktam yājñavalkyenā^a:- yamān vidyād ayaś-pindān śantaśthān dāru-pindavat, antasthā-yamavarjaṃ tu ūrṇāpindam vinirdiśet. The verse occurs in Yājñ. S., SS p. 29.

is said to have worked under the patronage of a king named Bhoja;¹ This king Bhoja is probably the famous scholar of Mālwa, for Uvaṭa at the end of the Vāj. Prāt. calls himself a native of Ānandapura,² and Ānandapura, according to Smith,³ was a principality under Mālwa. But the date of Bhoja⁴ was about 1018 A.D. Uvaṭa therefore lived about the 11th century, and allowing about a century for the acceptance of the Śikṣā as an authority, the lower limit of its date may be assumed as the 10th century A.D. With these data the Yājñ. Ś. is about three centuries earlier than the Vyāsa Ś., which Lüders⁵ assigns to the 13th century. In chapter VII. The Śikṣā quotes the Vāj. Prāt. on several occasions,⁶ and throws some light on the above-mentioned rule (see p. 44) of the Vāj. Prāt. regarding the aspiration of a plosive before a fricative. It says that the change in question does not occur before a fricative of the same class in the Mādhyandina⁷ School,

1. Aufrecht: Catalogus Catalogorum.

2. ityānanda-pura-vāstavya-vajraṭa-sūnurovvaṭena kṛte etc.

3. Early History of India: p. 342.

4. Ibid. p. 410.

5. Vyāsa Śik. p. 107.

6. e.g. II-20 (on pluta) SS pp. 19-20.

I-65 (on ṛ) SS p. 33.

7. SS p. 20. naitan mādhyandinīyānām saasthānatvāt
tayor dvayoh, saasthāne'pi dvitīyaṁ syād āpas-
tambasya yan matam.

though it occurs under similar conditions in the Āpastamba school. This variation was apparently dialectic, as it may be noticed even in modern dialects. Thus while the Skr. group ps is generally represented by ch in modern Indian languages, the group ts has a divergent treatment. It remains unchanged ^(except distinction in the second element) in a few dialects of the North-west, cf. Śināḥ bātsho or Gurezi bātshou for Skr. vatsā, but it has become¹ ch in other languages, e.g. Panjab-Lahndi vacchā, Hindi bāchā. The N.W. group, in this respect, may represent the Mādhyandina School. The Śikṣā further makes interesting² observations on y and ya in various positions as detailed in chapter VI. This would possibly connect the Śikṣā with areas in which Śaurasenī was spoken.

(b) The Vāsiṣṭhī Ś, the second in the list of the Śikṣās of the White Yajurveda, is not a work on phonetics, and is therefore different from a Śikṣā of the same name in the Taitt. school to be noted below. It is devoted to the distribution of verses (ṛc) and sacrificial formulas (yaḥ) in the Ś and the Yajurveda. It is admittedly³ a selection from the Sarvānukramanī, and is therefore a comparatively recent work, designed as a handy manual for reference.

1. I owe the above data to Prof. R.L. Turner.

2. SS p. 23.

3. SS p. 36.

atha śikṣam pravakṣyāmi vāsiṣṭhasya mataḥ yathā
sarvānukramam uddhṛtya ṛgajusoḥ tu lakṣanam.

The designation of this work as "Śikṣā" is another example of the secondary sense in which the term was often employed in the later phases of Vedic literature.

(c) The next Śikṣā mentioned is the Kātyāyanī. In the form that we find it at present, it is of little importance, being a fragmentary work on accent containing only 13 verses.¹ Most of the rules prescribed are a metrical exposition of those laid down in Vāj. Prāt. IV-131-141. *pronounced double, is contrary,*

(d) The Pārāśarī Śikṣā, to which we owe the list of the Śikṣās belonging to the White Yajur Veda, speaks of itself as the foremost among the Śikṣās "like Virāj among the gods, or like Puṣkara among the holy places."² It claims to be a Śikṣā of the Pārāśaras, which has been classed as a school of the White Yajurveda along with Kāṇva, Mādhyandina, etc.³ But as it mentions nearly all the leading Śikṣās of the White Yajurveda, it should be posterior to them, so far as its present form is concerned, although its kernel may have been much older. Besides the reference to a modern holy place like Puṣkara, the Śikṣā offers the horrors of a hell, well-known to modern Hinduism, named Kumbhīpāka,⁴ to those who

1. ŚS pp. 46-51.

2. ŚS p. 52 yathā deveṣu viśvātmā yathā tīrtheṣu puṣkaram, tathā pārāśarī sarvaśāstreṣu gīyate.

3. Caranavyūha, 19.

4. ŚS p. 58: - anyathā nirayaṃ yānti kumbhīpākaṃ ca dāruṇam. cf. Bhāgavata Purāṇa V.26.7 (St. Pet. Lexicon).

mispronounce Vedic texts. The modernity of its present form is further confirmed by its observations on the pronunciation of y in various positions.¹

Some of its original contributions may be mentioned:- of the Sikṣā, however, seems to indicate

- (1) The half-long vowel ksipra (cf.p.292):
- (2) y the product of Sandhi is "light" (cf.p.217);
- (3) the observation that the intervocalic double k in kukkuta must be pronounced double, is contrary, to the Vāj. Prāt's rule, and indicates dialectic divergence.²

It is a fairly complete Sikṣā, on the lines with the Vājñ. S., and gives a copious number of examples³ from the White Yajur Veda.

(e) The next Sikṣā mentioned by the Pārā. is the Gautamī. As available in the present form it belongs to the Sāma Veda, and will be examined under that head (cf.p.85).

(f) The Māṇḍavī Sikṣā is attributed to Māṇḍavya,⁴

1. Ibid.p. 58, cf.p.218.

2. SS p. 59:- kukkutaḥ kama-lubdho'pi kakāra-dvayam uccaret, evaṁ varṇaḥ prayuktavyaḥ kukkuṭo'si nidarśanam cf. Vāj. Prāt. IV-142.

3. These have been mostly identified by the editor of the Sikṣā Samgraha.

4. SS p. 72:- athātaḥ sampravakṣyāmi śiṣyānaṁ hitakāmyayā, māṇḍavyena yathā proktā oṣṭha-samkhyā samāhṛtā.

a name mentioned in the list of families in the Śatapatha Brāhmaṇa.¹

The Māṇḍavya families, according to Varāhamihira,² lived in the middle, the North-west and the North. The nature of the Śikṣā, however, seems to indicate its connection more with the middle and east than with the north, for it is exclusively devoted to the enumeration of words containing the labial plosive b. (cf. p.218). This was presumably done in order to prevent the confusion between y and b, which was probably more common in the above-mentioned areas than in the north. It is possible, however, that the Śikṣā refers to a period when the pronunciation in question was still found in the north. For the confusion of y and b is still found in some of the north-western dialects like Dogrī and Bhadarvāhī in Western Pahari, and Śinā in Dardic.

(g) The Amoghānandinī Śikṣā is composed on the same lines as the Yājñ. and the Pārā., but to some extent, its object seems to have been similar to that of the Māṇḍavī Ś., for it gives a list of words with an initial labio-dental y, and another with the labial plosive b. It was therefore presumably composed in

1. X.6.5.9. atha vaṃśaḥ:- samānam āsānjīvi-putrāt...
māṇḍavyān māṇḍavyaḥ kautsāt kautsaḥ....

2. Weber: Ind. Studien XIII, 125.

the same area as the Māṇḍavī Śikṣā.

Like the Yājñ.Śik. it follows the Vāj.Prāt., cf. the list of plutas on 88 p. 98: but it mentions more terms for nasal sounds, viz. (Paṅga), Mahāraṅga, and Atiraṅga, the significance of which, however, is obscure.¹

(h) The Mādhyandinī Śikṣā attributed to a "Maharṣi Mādhyandina"² and its abridged form, the Laghu Mādhyandinī Śikṣā, are apparently modern. The former gives a list of words with a velar kh as ākṣhūḥ, marūḥkhāḥ, in order to distinguish the sound from the cerebral³ ṣ. The latter work gives a rule that the cerebral ṣ was to be pronounced as kh, except before a cerebral plosive.⁴ But unfortunately there are absolutely no references to time or place in these Śikṣās. Nevertheless, it is interesting to note that these Śikṣās refer to an actual confusion between ṣ and kh as may be corroborated by the pronunciation of Skr. tatsamas in modern Indian languages. Thus, while some of the Eastern dialects, e.g. Behari, pronounce Skr. rai-as rikhi, Panjabi and Western Hindi have generally risi, while Lahndi has commonly rikhi. Before cerebrals, however, ṣ of tatsama words, as noticed by the Śikṣās, is not pronounced as kh, but ṣ, e.g. no modern dialect pronounces tatsama duṣṭa-as dukṭa.

1. 88 p. 97.

2. Ibid. p. 109.

3. Ibid. p. 110:- atra kavargīya-khakāra nirdiśyante etc.

4. Ibid. p. 114:- atha śikṣam pravakṣyāmi mādhyandina-mataṃ yathā, ṣakārasya khakāraṃ svat tuka-yoge tu no bhavet.

Besides the above Śikṣās of the White Yajurveda mentioned by the Pārāś, the following two Śikṣās may be mentioned:-

(a) The Varna-ratna-dīpikā Śikṣā is a fairly complete Śikṣā, on the same lines as the Yājñ. Ś. It is evidently modern, for it admittedly follows¹ the Prātisākhya. The author gives his name as Amareśa, and says he belongs to the family of Bhāradvāja.

In the pronunciation of ṛ and r it follows the Yājñ. Ś, for it speaks of ṛ as velar and r as alveolar.²

(b) The Keśavi Ś is a concise and lucid exposition of some of the comparatively recent phonetic changes which it attributes to the Mādhyandina School, e.g. ṣ to be pronounced as kh, y and v in various positions (cf. Chap.VI), the pronunciation of Svarabhakti as e, the slight lengthening of a short vowel unless followed by ā (cf.p.293) etc.³ The author is said to be the astrologer Keśava, and he admittedly follows the Pratijñā Sūtra.⁴

The Pratijñā Sūtra forms a supplement to the

1. Ibid. p. 117.

amareśa iti khyāto bhāradvāja-kulodvahaḥ, so'ham śikṣām pravakṣyāmi prātisākhyānusārinīm.

2. Ibid. p. 119:-

ṛvarṇo'tha kavargas' ca jihvā-mūliya eva ca jihvāmūle bhavanti... repḥas' ca danta-mūlotthah.

3. ŚŚ pp. 128-148. ~~cf.~~

4. Ibid. p. 149:-

iti śrī-daivajñā-keśava-kṛtā pratijñā-sūtrānu-sārinī keśavī śikṣā samāptā.

Benares edition of the Vājasaneyi Prāt. and its authorship is attributed to Kātyāyana.¹ The work embodies in a Sūtra form the recent phonetic changes expounded by the Keśavī Ś. It is hardly likely, however, that so ancient an author as Kātyāyana was actually the author of this work, which prescribes pronunciations characteristic of modern Indian Vernaculars. Moreover, the Caranavyūha does mention a Pratijñā Sūtra which was said to be the third Parīśiṣṭa of the White Yajur Veda, but its subject-matter being ceremonial,² it is quite different from the work before us. It is possible, however, as Weber³ thinks, that the work is a production of another man born in the family of Kātyāyana. He may have summarized into Sūtra form some of the similar rules from the Yājñ. Ś., though the rule regarding the pronunciation of a as kh does not occur even there.

The above is a short conspectus of the Śikṣās of the White Yajurveda. The Śikṣās that may be regarded as fairly complete are only four, viz. the Yājñ., the Pārā, the Amoghānandinī and the Varnaratnadīpikā Śikṣās. Of these four, the oldest, as will appear from the above discussion, is the Yājñ. Śikṣā, the lower limit of its date being the 10th

1. Also edited Weber: Abhandlungen der königlichen Ak. der Wissensch. zu Berlin for 1870.

2. Weber: Ind. Stud. X p. 433.

3. Weber: Ibid. p. 436.

century A.D. As all these Śikṣās prescribe the peculiar y and v pronunciations, they presumably belong to the Śaurasenī¹ area, as some of them speak of these phonetic phenomena as being peculiar to the Mādhyandinīya¹ school, which was confined to the Madhya Desā.²

1. Yājñ.Ś. ŚŚ p.20.

Kesāvi Ibid. p. 138.

2. Weber: Ind. Stud. IV-72. cf. Ap. 216.

(Chap.III) on Saṁdhi rules, another on abhiñidhāna, (Chap.VIII) which it calls bhukta or bhuktya, (cf. p. 227) and another on metre. It belongs to the Śarāṅgīya school, which, according to the Śaraṅga-vṛṇa,² was one of the twelve sub-divisions of the Śaraṅga school of the Black Yajur Veda. The school was presumably known to

¹Oöttingen, Folio 3. On prax propedye vichan bhuktye sarva-loka-pitāmahan, śikṣā sakhāt pravakṣyāmi
toṣivālapitām anan, sarāṅgīya māhātīdham pravakṣyāmi
anupūrvāśah, nibodhate budhair justān nityam vāṇśala-
śantaya.

Fol.11 Colophon:- Ya idam pāṭhate nityam yajñādhyā-
yeḍ dvijān, sayēṭhan budhyate yō vai brahṇa-lokan sa
paśyati.

²(Bāṇareś) 10. ya jayurvedasya angulīnir bhāṣā bhavanti

11. śakra śaraṅgā nām āvāśāyāṇāḥ bhavanti
śaraṅgā kvārāṇā śarāṅgīyāḥ.

The Śikṣā of the Black Yajur Veda may be described under two heads:- (1) The Śikṣā of the Carayaniya School (2) The Śikṣā of the Taitt. School.

(1) The Carayaniya Śikṣā is a MS work, of which I have examined two MSS:- (a) No.21 of 1876-78, Bhandarkar Oriental Research Institute, Poona (b) Sanskrit 25 of the University Library, Göttingen. The treatise speaks of itself as a "Mahāśikṣā, spoken by the Creator himself"¹ and the fruit of understanding it is said to be a place in Brahma-loka. It is a complete Śikṣā, even more complete than the Yājñ.Ś, for it gives a full chapter (Chap.III) on Sandhi rules, another on abhinidhāna, (Chap.VIII) which it calls bhukta or bhākya, (cf.p. 227) and another on metre. It belongs to the Carayaniya school, which, according to the Caraka-vyūha,² was one of the twelve sub-divisions of the Caraka school of the Black Yajur Veda. The school was presumably known to

¹Göttingen, Folio 1 Om prak prapadye vibhum bhaktya
sarva-loka-pitamaham, śikṣam saksat pravakṣyami
tenaivalapitam aham, carayanin mahasikṣam pravakṣyami
anupurvasah, nibodhata budhair justam nityam vanmala-
santave.
Pol.11 Colophon:- Ya idam pathate nityam yas cadhyapa-
yed dviyam, asyartham budhyate yo vai brahms-lokam sa
sacchati.

²(Benares) 10. ya jurvedasya sadasitir bheda bhavanti
11. tatra caraka nama dvadasavidha bhavanti
caraka hvaraka carayaniyah.

Pol.11:- dasa carayaniyah
pravyatir varnamah tani na gadatah agau. urah kaphah siras
tala danta osthau in nasika, jihvamulo ta sravasa dantamules
(sic) tathaiva sa. Both the MSS (Poona as well as Göttingen)
read dantamules tathaiva sa.

³SS p.378. agau sthanani varpam.

Patañjali, who speaks of a pupil of Cārāyaṇa as "fond of a blanket."¹ The Śikṣā quotes a passage² which is possibly taken from the extinct text of the Cārāyaṇīya School, as only a part of the passage can be traced in the Kausītaki Samhitā. The treatise bears the stamp of the classical period: the 5th chapter is devoted to classical metre: metres like Indravajrā, Praharsa etc. have been described.³ Moreover, the Śikṣā does not seem to have been the prototype of the Prātisākhya for (a) like the Pāṇ.Ś, it speaks of r̥ and r̄ as cerebrals⁴ (b) it quotes the Vāj. Prāt. on two occasions.⁵ The Śikṣā seems to be posterior to the Pāṇ.Ś, for while it prescribes the cerebral pronunciation of r̥ and r̄, it enumerates ten places of articulation,⁶ mentioning two, viz. corner of the mouth (śṛkva-) and the roots of the teeth (danta-mūla-) in addition to the eight mentioned by the Pāṇ.Ś,⁷ and is

¹ On Pāṇini I.1.73: "kambala-cārāyaṇīyaḥ: Kaiyyāṭa's explanation:- kambala-priyasya cārāyaṇīyasya śīṣyaḥ."

² Pol.6:- "agne samrāḡ ajaikapād āha (va) nīya" amāvasyāyam vā yajate. The portion of the line within inverted commas can be traced in the Kausītaki Samhitā VII.13, but not the succeeding portion.

³ Pol.7:- ekadaśopendra-vajram dvadaśam tu jaloddhatam trayodaśākṣara-padam praharsam vṛttam ucyaṭe.

⁴ Pol.8:- mūrdhany (sic) ṛturaḡa jñeyā dantya śtulasā smṛtaḥ.

⁵ Pol.9:- varṇasyādarśanam loṇaḡ Vāj.Prāt. I-141.

Pol.4:- "svaro'kṣaram" iti prahur ācārya akṣara-cintakāḥ.
Vāj. Prāt. IV-99.

⁶ Pol.1:- daśa sthānāni varṇānāḡ kīrtayanti manīṣiṇaḡ yataḡ pravṛttir varṇānāḡ tāni me gadataḡ śṛṇu, urāḡ kaṇṭhaḡ śīras tālu danta oṣṭhaḡ tu nāsikā, jihvāmūlaḡ tu śṛkvaśṭa dantamūlas (sic) tathaiva ca. Both the MSS (Poona as well as Göttingen) read dantamūlas tathaiva ca.

⁷ ŚS p.379. aṣṭau sthānāni varṇānāḡ.

and is thus a further development on that Śikṣā. The Śikṣā gives no geographical data. It prohibits¹ the pronunciation of Svarabhakti as i or u, from which we may assume that i and u vocalization of Svarabhakti was actually current in the area where the Śikṣā was composed. In that case only a negative conjecture could be made, viz., that the Śikṣā belonged to an area in which Ardhamāgadhī and Apabhraṃśa were not predominant, as, according to Fischel,² the Svarabhakti vowel a was more frequent in these dialects.

(2) The Śikṣās of the Taitt. School are by far the most important contribution to Indian phonetics. As their MSS are available only in South India, they were presumably composed in that part of the country. That South India became par excellence the home of Vedic studies during the medieval period has been noted by Indian tradition. Thus Nāmakaṇṭha³ quotes a passage from Vyāsa and another from a "Dharma Śāstra" to the effect that "during the Kali age, the Brahmans north of the Vindhya will be devoid of Yajñas and averse from astrology. The

¹ Pol. 9:- svarabhaktiḥ prayujñānaś trīṇ doṣān varjayed budhaḥ, ikāraṁ cāpyukāraṁ ca grasta-doṣān vivarjanāt.

² p. 103. The primary Śikṣā:-

³ In his introduction to Pāraskara Gṛhya Sūtra p. 58:-
tathā ca vyāsaḥ:-

samprāpte tu kalau kale vindhyādrer uttare sthitāḥ
brāhmaṇā yajña-rahitā jyotiḥ-śāstra-parāṇaukhāḥ.
dharma-śāstre:-

vindhyasya dakṣiṇe bhāge yatra godāvarī sthitā
tatra vedāś ca yajñāś ca bhaviṣyanti kalau yuge.

Vedas and the Yajñas will be current in the region south of the Vindhya where the Godāvari flows." These Vedic studies stimulated the growth of the Taitt. Śikṣās, in which the study of phonetics was extended to a very advanced stage, as the chapters on quantity and accent (cf. chaps. XI + X) will show.

There is a large number of Śikṣās connected with the Taitt. school, of which I have examined 16. But it is difficult to determine definitely which of these works was really original, and we have to depend a great deal upon tradition in the solution of this difficulty. A MS work,¹ the Veda-lakṣaṇanukramanikā, mentions nine primary Śikṣās and three secondary Śikṣās. The former were said to be the "Bhāradvāja, Vyāsa, Śambhu, Pāṇini, Kauhallīya, Bodhāyana, Vālmīki and the Hārita ("Harita") Śikṣās," while the latter were "the Sarvasammata, the Āraṇya and the Siddhānta Śikṣās." The former list also occurs in the commentary on the Siddhānta Śikṣā.²

The Taitt. Śikṣās may now be briefly examined:-

(a) The Bhāradvāja Śikṣā¹ is a monograph on certain words of the Taitt. Saṃhitā which were either liable to be

¹ No. 967 (Madras, of 1905)

(a) nine primary Śikṣās:-

bhāradvāja-vyāsa-śambhu-pāṇini-kauhallīyakam, bodhāyano
vasiṣṭhas ca vālmīkir haritam nava. 5

(b) three secondary Śikṣās:-

sarva-sammataṃ āraṇyaṃ tathā siddhāntam eva ca, upaśikṣā
ime proktā lakṣaṇa-jñāna-kovidaiḥ. 6

² On verse 2:-

bhāradvāja-vyāsa-pāṇini-śambhu-kohala-vasiṣṭha-vālmīki-
harita-bodhāyanokta-śikṣādikaṃ parāmṛśya

³ Edited E. Sieg.

mispronounced or confused with others of a slightly different form. Thus verse IL. prescribes that the final consonant in the tāriṣat of Taitt. S.I.5.11.4 is t, but it is not t in the tāriṣaḥ of Taitt. S.III.3.11.4. The treatment of this Śikṣā, then, is empirical, and it contains very few observations of general interest to linguistics. Of these, the one on the syllabic nature of l between two consonants will be noted on page 95. This Śikṣā seems to be comparatively old, perhaps a contemporary of the Vyāsa Śikṣā, for the author of the Siddhānta Śikṣā, as noted above, mentions in his commentary the name of the Bhār. Ś as the first among the list of the Vyāsa Śikṣā. The first verse betrays the stamp of modern

(b) The Vyāsa Śikṣā has been exhaustively examined by Lüders,¹ who puts the lower limit of its date as the middle of the 13th century. Its views on doubling and quantity will be discussed on pages 176, 200, 289. Its theory of articulation is somewhat different from that of the Pāṇ. Śik. Instead of the 'head' "śīras" and the uvula "jihvāmūla" of the Pāṇ. Śik., it mentions the three parts of the mouth passage, viz., the beginning, the middle, and the end,² while it does not speak of r as cerebral, but as alveolar.³ These data seem to indicate that the

¹Vyāsa Śik. p.107.

²XXIV.-6. kantho vaktrādi-madhyāntaṃ danta-mūlānta-nāsikam
tālvoṣṭhaṃ uraḥ-sthānāni varṇānāṃ karaṇāṇy adhaḥ
but cf. Pāṇ. Śik. §8 p.379:-

astau sthānāni varṇānāṃ uraḥ kanthāḥ śīras tathā
jihvāmūlaṃ ca dantāś ca nāsikoṣṭhaḥ ca tālu ca.

³Cf. page 14.

(d) The next work mentioned is the Pāṇ. Śik.

Pāṇ. Śik. was not held as a Vedāṅga even by such a careful work as the Vyāsa Śik.

(e) The existence of the Śambhu Śik. provided matter for conjecture to Kielhorn¹ and Lüders,² the former supposing it to be Pāṇ. Śik. in another garb. I have, however, actually found this Śik. among the Madras MSS (No. 988 of 1905). It is a work considerably different from the Pāṇ. Śik. It lays down much more advanced theories of quantity³ and accent, and has been occasionally quoted by the Tribhāṣyaratna and the Vaidikābharana.⁴ It seems to be a comparatively old work, perhaps a contemporary of the Vyāsa Śik. The first verse betrays the stamp of modern Hinduism, as the author offers his greetings to Kālīkā, Lakṣmī and Sarasvatī. It is a concise but fairly complete Śik., dealing with accent, quantity, hiatus, doubling, Svarabhakti, etc.

¹ Indian Antiquary: V., 199.

² Vyāsa Śik. p. 111.

³ Cf. Tribhāṣyaratna on Taitt. Prāt. I.1:-

vidher madhyastha-nāsikyō na virodho bhavet smṛtaḥ
tasmāt karoti kṛyāṇi varṇāṇaṃ dharmā eva tu.

This verse, quoted by the Tribh. in its discussion of the anuvāra as a dharmī or a dharmā, is the 45th verse in the Śambhu Śik.

(b) On Taitt. Prāt. XXI.15:- indriyaviṣayo yo etc.

(cf. page 289) is the 46th verse in the Śambhu Śik.

⁴ The Vaidikābharana on Taitt. Prāt. I.-40 quotes the following:-

anudatto ḥṛdī jāyō mūrdhny udātta udāhṛtaḥ
svaritaḥ karaṇa-mūlīyaḥ sarvāsyē pracayaḥ smṛtaḥ.

It is the 36th verse in this Śik.

(d) The next work mentioned is the Pāṇ. Śik.

Possibly a Taitt. recension of this Śik. also existed, authorities, has not yet ^{found} been discovered, so far as I am though I have not yet come across any MS of the work in this school.

(e) The Kauhalīya Śik. (No. 893) is a short manual of 79 verses, the first 41 of which are devoted to accent. The Śik. professes "to follow the teaching of Kauhalī."¹ It is mentioned "86 vowels, but excluded the long ī." It is difficult to say whether this name is essentially related to Kauhalīputra, a phonetician mentioned in Taitt. Prāt. XVII.-2, who held that the degree of nasality doubling in anuvāra and the nasal consonant was moderate. But the opinion is not mentioned in this Śik.

In a verse which has been quoted by the Vaidikābharapa² in the first of these passages the accent of the syllable on Taitt. Prāt. V.-14, it states that "only he can expound the Jāṭa Pāṭha who knows the Śāstras like the Prātisākhyas and who is an expert in all the Śikṣās." This reference, and the fact that it contains little that is not common to other Śikṣās, indicate it to be a comparatively recent compilation. Regarding the movements of the hand in accentuation, it prescribes the use of "the right, and not the left, hand."³

¹atha śikṣāṃ pravakṣyāmi kauhalīya-matānugām

svarādi-nirṇayas tatra kriyate tan nibodhata. 1.

²prātisākhyādi-śāstrajñāḥ sarva-śikṣā-viśāradaḥ

buddhi-śakti-sameto yeh sa jāṭam vaktum arhati. 55.

³avarāṇa hastena vinyāśyed vipaścid dakṣiṇena tu

śrevo vipulam anvicchan na savyena kadācana. 35.

(f) Bodhāyana - This Śikṣā, mentioned by our authorities, has not yet been discovered, so far as I am aware.

(g) The Vasiṣṭha Śik., according to Lüders,¹ seems to be older than the Vyāsa Śik., as "it used an older text." The Vaidikābharṇa also quotes it,² stating that it mentioned "26 vowels, but excluded the long $\bar{ī}$." My copy of the text,³ however, is a fragmentary work, containing only 13 verses, devoted almost entirely to doubling.

(h) The Vālmīki Śik. has not yet been discovered. The Taitt. Prāt. quotes Vālmīki's opinion in two passages; in the first of these passages the accent of the syllable "Om" was said to be high,⁴ while in the second, Vālmīki's disapproval of the change of Visarga into jihvāmūliya and Upadhmanīya has been mentioned.⁵ It is not unlikely, therefore, that Vālmīki, whoever he may have been, as a phonetician was actually the author of a Śikṣā attributed to his name.

(i) The Hārīta Śikṣā similarly remains to be discovered. As it has been quoted by the Pārisīkaṭṭikā,⁶

¹Vyāsa Śik. p.106.

²Taitt. Prāt.p.8:- tad ucyate vasiṣṭha-śikṣāyam, lvarṇa-
dīrgham parihāpya svarāḥ ṣaḍviṃśati proktaḥ - ityādinā etc.

³No. 957 (of 1906, Madras).

⁴XVIII.-6 udatto vālmīkeḥ.

⁵IX.-4. kavarga-paraś cāgniveśya-vālmīkayoḥ.

⁶On verse 27:- tatra hārīta-śikṣā:-

manah kāyāgnim āhanti sa prerayati mārutam
mārutas tūrasī caran mandram janayati svaram.

its actual existence in a comparatively recent period may not have been impossible. Moreover, the Taitt. Prāt. also¹ quotes the opinion of a phonetician Hārīta on the non-duplication of a breathed fricative. This work was edited by Otto Franks in 1886. The latter is a short manual of 42 verses with no mention of the author's or the commentator's name, and with a very meagre treatment of the most difficult points in phonetics, viz. accent and quantity. The work examined by me, however, is more than three times the size of Franks's treatise. It has 170 verses, and has four chapters with an exhaustive commentary. The name of the author¹ is Keśavārya while that of the commentator² is Mañci Bhagga. Franks's commentator seems to be a different person, for not only does his commentary vary in point of treatment, the introductory verse³ of each is also different. Mañci Bhagga's commentary explains "sarva-samasta" as that which "expounds subjects common and acceptable to all the phonetic works, the Prātisākhya etc. belonging to the Taitt. school."⁴ There is no such explanation given by Franks's

¹ IV.-121 :- sarva-dva-kāṇḍendroḍya mandanena mahātmajā
prapītan keśavāryeṇa lakṣaṇaṇ sarva-samastan.

² Cf. the Colophon at the end of the commentary:- iti
brīhannāci bhagga-viracitay sarva-samaste-śikṣā-vivaraṇay
śaṁpītan.

Franks's commentator thus begins:- dhyātṛya sarva-
jagannāthan sambay sarvārtha-sādhakam
vyākhyāyate' āduna śikṣā sarva-samaste-lakṣaṇa.

¹ XIV.-18.

uṣmā'ghoḥo hārītaśya.

² sarva-samastay sarvayāy taittirīya-sāhopyogināy
prātisākhya-prabhūtināy samastan samānārthan lakṣyante
prakṛīyante' neneti-lakṣaṇa.

Besides the above primary Śikṣā, the following secondary Śikṣās have been mentioned:-

(a) The Sarvasammata Śikṣā, MS. No. 998 (of 1905, Madras) is a far different work from the one edited by Otto Franke in 1886. The latter is a short manual of 49 verses with no mention of the author's or the commentator's name, and with a very meagre treatment of the most difficult points in phonetics, viz. accent and quantity. The work examined by me, however, is more than three times the size of Franke's treatise. It has 170 verses, and has four chapters with an exhaustive commentary. The name of the author¹ is Keśavārya while that of the commentator² is Mañci Bhaṭṭa. Franke's commentator seems to be a different person, for not only does his commentary vary in point of treatment, the introductory verse³ of each is also different. Mañci Bhaṭṭa's commentary explains "Sarva-sammata" as that which "expounds subjects common and acceptable to all the phonetic works, the Prātiśākhya etc. belonging to the Taitt. school."⁴ There is no such explanation given by Franke's

¹IV.-121 :- sūrya-deva-budhendrasya nandanena mahātmanā
prapītam keśavāryeṇa lakṣaṇam sarva-sammataṁ.

²Cf. the Colophon at the end of the commentary:- iti
śrīmañci-bhaṭṭa-viracitam sarva-sammata-śikṣā-vivaraṇam
samāptam.

³Franke's commentator thus begins:- dhyātvā sarva-
jagannātham sambam sarvārtha-sādhakam
vyākhyāyate' dhruvā śikṣā sarva-sammata-lakṣaṇā.
But Mañci Bhaṭṭa:- gaṇeśvaraṁ prapanyāṇaṁ loka-pālān
grahān gurūn, sarva-sammata-śikṣāya vakṣye vyākhyānaṁ
uttamaṁ.

⁴sarva-sammataṁ sarveṣāṁ taittirīya-śākhopayogināṁ
prātiśākhya-prabhṛtīnāṁ sammatam samānārtham lakṣyante
prakṛīyante' neneti-lakṣaṇam.

commentator. Again, Franke's edition (p.31) has only two verses on accent, describing the "castes" of the three accents; but the Madras MS has 33 verses, and a fairly copious treatment of accent. The two verses of his edition do not occur among these 33 verses, but are found about the end of the Madras MS, being verses IV.-104-105. Again, regarding this Śikṣā Lūders¹ remarks that certain portions of this work are "evidently nothing but elaboration of the corresponding portions of the Vyāsa Śik." This may be true of Franke's edition, but not so much of the Madras MS, which contains some material hardly to be met with in any other extant Śikṣā. For instance, its observation that the quantity of a consonant without a vowel is a quarter-mora, and that the quantity of a "pause" between a labial vowel and the first member of a consonant-group is a half-mora, provided that the consonant-group intervenes between two

labial vowels, e.g. in utpūtā, the "pause" between u and t was said to be a half-mora.³ Whatever may be said of these opinions, it is not unlikely that they are original theories of the Śikṣā itself. Moreover, although the work is admittedly of a secondary character, its date does not seem to be very recent, for it has been quoted both by the Vaidikābharana on Taitt. Brāt. XIV.6.

¹ Vyāsa Śik. p.106.

² IV.-95, see page 300.

³ IV.-80:- oṣṭhayoh svarayor madhye saṃyogādir yadi sthitaḥ
visargāt kṣaparād ūrdhvaṃ ubhayatrārdha-mātrikaḥ.
com.:- yathā utpūtā, atrokāra-takārayor madhye virāmo'
rdha-mātrākālāḥ.

kaṭa-śāntoḥ kaṭ ityāhur asvibhyāṃ paritāḥ kṛtaḥ. 45

Tribhāṣyaratna and the Vaidikābharana.¹

(b) The Āraṇya Śikṣā (MS. No.866) is a monograph on accent in the Taitt. Āraṇyaka. It enumerates words with accent in different positions, those with an initial accent,² those with two final udāttas, etc. see page 272. On verse 27 the commentary has an interesting discussion on the relation of accent and quantity, see page 272. This Śikṣā is admittedly³ a more recent work, for it speaks of itself as "nectar extracted from the ocean of the nine Śikṣās".

(c) The third and last secondary Śikṣā mentioned is the Siddhānta Śikṣā, MS. No.1012. The designation is a misnomer, for the treatise does not deal with the general principles of phonetics. Its treatment is entirely empirical; it is prepared on the same lines as the Bhāradvāja Śikṣā, giving lists of words containing different sounds in alphabetical order, e.g. in kamīyante, lokaṃ, etc.⁴ The only point of some interest is the view (see page 250)

¹Cf. the verses on the various kinds of Svarabhakti quoted by the Tribhāṣyaratna on Taitt. Prāt. XXI.5; Franke's edition p.22.

Again cf. II.3:- kutrācit svarayor madhye dvitam lakṣyaṇusārataḥ, pūrvāgamas tathā tatra jñeyo varṇa-vicakṣanaḥ quoted both by the Tribhāṣyaratna and the Vaidikābharana on Taitt. Prāt. XIV.6.

²adyudattāni vākyaṇi caika-dvi-tryādi-saṃkhyayā, vividhāni tu vṛndāni vispaṣṭāny atra kṛtsnaśaḥ 2.

³Introductory verse, last two lines:-
.....
ksiti-sura-gaṇa-hetor etadaranya-śikṣā-
mṛtam iva nava-śikṣā-varidher uddharāmī.

⁴kakarādih kamīyante syād amuṃ lokaṃ uttarah
kaṭa-dhātoḥ kaḍ ityāhur aśvibhyaṃ paritaḥ kṛtaḥ 45.

that "tvam" is optionally pronounced tvān in the Vedas.

Nevertheless, the place of this Śikṣā in the chronology of Indian phonetic literature is of some importance. The author,¹ who is said to have compiled both the Śikṣā and the commentary, not only enumerates the nine primary Śikṣās described above, but also mentions the commentaries Tribhāṣyaratna² and the Vaidikābharana, as well as the authors Bhaṭṭa Bhāskara Miśra and Gaṅgeśa. Now Bhaṭṭa Bhāskara Miśra, according to Burnell,³ lived about 950-1000 A.D., while the date of Gaṅgeśa, according to Keith,⁴ is 1150-1200 A.D. Moreover, considering the fact that it quotes all the primary Śikṣās including the Vyāsa Śik., it must be a more recent work than the above authors. But in view of the fact that it still esteems Bhaṭṭa Bhāskara's commentary on the Taitt. Saṃhitā as the bhāṣya, it was composed perhaps not much after Śaṅkara's commentary came into prominence. The lower limit of its date was therefore the 15th century A.D., about a century later⁵ than Śaṅkara. The

¹ Cf. Colophon:- śrīnivāsādhvarīndreṇa catuṣkula-sudhāmsunā
ślokaḥ siddhānta-śikṣāyaṃ catuṣsaptatir īritāḥ
śrīnivāsādhvarīndra-viracitā siddhānta-śikṣā-vyakhyā samāpta.

² Verse 2:- pūrva-śabdān parāmrśya prātisākhyaṃ ca sarvaśaḥ
siddhānta-śikṣāṃ vakṣyāmi veda-bhāṣyaṇu-sārīṇiṃ.
com. tribhāṣya-ratnair vaidikābharanādi-vyakhyāna-
purāḥ-saratayā kṛtaṃ prātisākhyaṃ ca parāmrśya vedabhāṣyaṇu-
sārīṇiṃ bhaṭṭa-bhāskarādi-śodhana-janyatayā viśvasanīyaṃ
..... siddhānta-śikṣāṃ vakṣyāmi.

³ Index to Skr. MSS at Tanjore, p.7.

⁴ Indian Logic p.33. Gaṅgeśa is mentioned under verse 7:-
anvikṣikīṃ parama-kāruniko prajānāyati Gaṅgeśaḥ

⁵ Burnell:
Vamsabrāhmaṇa, pp. VI ff. Grammar p.41.

commentaries Tribhāṣyaratna and the Vaidikābharana should therefore have been presumably composed before the 15th century A.D.

But Śikṣās much more valuable than some of the above have now been discovered. Three of these, all Madras MSS, may be described:-

(1) The Āpiśali Śikṣā MS No. 864, is mostly devoted to articulation. The name of Āpiśali as a Grammarian anterior to Pāṇini has been pointed out by Burnell,¹ while the Vaidikābharana² quotes the Śikṣā by name, and the passage quoted has been identified by me in the Śikṣā, with a slight variation of reading. The Āpiśali Śik. then should be earlier than the Siddhānta Śik., which, as shown above, mentions the Vaidikābharana. Moreover as suggested above (see page 18), this Śikṣā possibly suggested to Kaiyaṭa the eleven kinds of "external effort" as in no other Śikṣā have these phases of "external effort" been described. If this was a fact, the lower limit of its date may be earlier than the 11th century A.D., being the probable date³ of Kaiyaṭa.

But it is possible to push back its date even further. For Rāja Śekhara (circa ^{10th century} 937-1077) in his Kāvya Mīmāṃsā

¹ Aindra School of Grammarians, pp. 1, 36.

² On Taitt. Prāt. II-47 śeṣaḥ sthāna-karaṇā ityāpiśala-śikṣā vacanāt. The actual reading in my transcript of the MS is:-
(jihvāgreṇa dantyanām) śeṣaḥ sva-sthāna-karaṇyāḥ 24. As this Sūtra occurs also in Candra's Grammar (18), the possibility of a borrowing on the part of either of these works is a matter for further investigation.

³ Belvalkar: Systems of Skr. Grammar p. 41.

actually names this Śikṣā, as Bhagvad Datta¹ has pointed out. The probable lower limit of its date may therefore be assumed as the 9th century A.D.

The upper limit of its date, however, can not be pushed back very far, as in an introductory verse it describes its object² to be "the fixation of data relating to Vedic texts as prescribed by Śikṣā and Grammar, without conflicting with the Prātisākhya." The work, though in substance the authorship of "the sage Āpiśali",³ possibly underwent further changes² in course of time.

(2) A much more interesting Śikṣā is the Kālanirṇaya (on Quantity), which had come to the notice of Whitney⁴ and Lüders,⁵ but they could not trace it. It has now been discovered in Madras, and copies of two MSS Nos. 891, 892 have been sent to me. Its observations on quantity will be discussed in chapter XI. As regards its date, Burnell⁶ suggested the 14th century and thought it was probably a work of Sāyana. But as the Vyāsa Śik. has borrowed a portion from this Śik.,⁷ it should be earlier than the 13th century, the date of the Vyāsa Śik. As regards

¹ Māṇḍūkī Śik. p.6.

² tasmāt tat-tat-samānāyē prātisākhya-virodhataḥ karyam sarvaṁ vyavasthāpyam śikṣā-vyākaraṇoditam. 5.

³ atha śikṣaṁ pravakṣyāmi matam āpiśaler muneh 1a.

⁴ Taitt. Prāt. p.355.

⁵ Vyāsa Śik. pp.110,111.

⁶ Aindra School of Grammarians, p.49.

⁷ Lüders Ibid. opt.cit.

the upper limit of its date, no particular data are available; but the work is evidently posterior to the *Prātisākhya*s, for in the introductory verse the author says "After studying, according to my lights, the Śāstras like the *Prātisākhya*s etc., I proceed to describe quantity, for the comprehension of Vedic truth."¹ Several verses quoted by the *Tribhāṣyaratna* and the *Vaidikābharana* can be traced ~~out~~ in the *Śikṣā*. Thus the one quoted by the former on *Taitt. Prāt.* XVIII-1 is the 19th verse of this *Śikṣā*,² another cited on the same *Sūtra* is its 16th verse,³ while the one quoted by the *Vaidikābharana* on *Taitt. Prāt.* I-37 regarding the quantity of a final l is its 11th verse.⁴ Its commentary is named the *Kāla-nirpaya Dīpikā*, the commentator's name being *Muktīśvarācārya*. He combats *Patañjali*'s view - or rather, what seemed to him to be his view - that there was a "pause" between two individual sounds, see page 281. But even more interesting than the above is the *Parīśikṣā*, MS No. 924. It is a complete *Śikṣā*, with a lucid commentary. The striking observations of this *Śikṣā* on doubling, quantity and accent will be noticed in chapters V, XI. and X. The commentary gives us the definition of the

¹ prātisākhyaḍi-śāstrāṇi mayā vīkṣya yathāmatī, veda-
tatvābodhārtham iha kālo nirūpyate.

² svādhyāyārambhaśeṣasya prānavasya svarasya ca
adhyāyasyānuvākasyānte syād ardhā-tṛtīyatā.

³ sandhyakṣarāṇaṃ vedaṃ ca prānavam cāntarā tathā.

⁴ avasāne lakṛasya tripādatvam sadā bhavet.

syllable, see page 92th ed. But in the case of this work, both the name and the date are a riddle. As regards the title of the book, what was meant by Pāri? Aufrecht, in his Catalogus Catalogorum, suggests that Pārisīkṣā might be Pārāsārī Śikṣā. But, the difficulty of accepting this suggestion is that the text of this Śikṣā has very little similarity with that of the Pārāsārī Śikṣā. And then there is the phonetic difficulty of the change of a whole word Pārāsārī into Pāri, with a short final. The commentator on this Śikṣā, however, suggests that Pāri was the name of a sage. He thus describes the purpose of this Śikṣā:- "The author follows the works on phonetics etc. composed by the sages Bhāradvāja, Vyāsa, PĀRI, Śambhu, of Kauhala, Hārīta, Bodhayana, Vāsiṣṭha, Vālmīki etc., incomprehensible to people of modern times."¹ It will be noticed that eight out of the nine names quoted in this list are exactly those enumerated above by the Vedalakṣaṇanukramanikā among the nine authors of the primary Śikṣās. The 9th author given by our commentator is Pāri, while the one mentioned by the Anukramanikā is Pāṇini. It may be supposed, then, that "Pāri" was a clerical error for "Pāṇini". But this supposition vanishes when we note that the commentator even in verse² calls the work as the "Pārisīkṣā". Nor is the

¹ Introductory lines to verse 3:-

sāmpratikā-jana-duravabodha-bhāradvāja-vyāsa-pāri-
śambhu-kauk^hala-hārīta bodhayana-vāsiṣṭha-vālmīki prabhṛti-
munigana-vinirmīta-śikṣādi-granthānucāreṇa pratijānīte.

² satam mudam samprati pārisīkṣā -

vyākhyāna-bhūta hrdayaṅgameyam
vīlakṣaṇa yajugabhūṣaṇākhyā
kṛtīr madīyā vitanotu kāmam. 4.

It is verse 9 in the Pārisīkṣā.

name Pari to be met with elsewhere in Sanskrit. It can not be the name of the author, for he definitely gives his name as "Cakra".¹ Perhaps the author first thought of "Parīśikṣā" "a 'Rundschau'" on Śikṣā (though even this would be an unsatisfactory term) and then coined an attributive designation for a work relating to a survey of Śikṣā as a subject.

As regards Cakra, his style and metre indicate that he is a comparatively recent poet. He does not mention any locality, but presumably belongs to the South. A poet of this name is said to be the author of "Citra-ratnākara-kāvya" and "Citra-praśnottara-ratnāvalī",² but it is difficult to tell whether the author of the Śikṣā and of these works was one and the same person.

As regards its date, the Parīśikṣā was earlier than the Siddhānta-Śikṣā, for it is quoted both by the Tribhāṣyaratna³ and the Vaidikābharana,⁴ both of which have been mentioned by the Siddhānta Śikṣā. The lower limit for the date of its composition may be assigned to the 15th century, the probable date of the Siddhānta Śikṣā.

¹ tanayo vinayojīvalasya tasya
prathito vaidika-vāvadūka-siṃhaḥ,
krpayā mahatām sa cakra-nāma
hy api varṇa-krama-lakṣaṇaṃ karoti. 3.

² Augrecht: Catalogus Catalogorum.

³ On Taitt. Prāt. I-2. Series 1907

Yāvayam rājate tam tu svayam āha Patañjaliḥ h
uparī sthāyina tena vyaṅgyam vyañjanam ucyate.

It is verse 12 in the Parīśikṣā.

⁴ On Taitt. Prāt. I-2.

anvarthaṃ mahāsamjñā vyañjayanty arthāntarāṇi ca
pūrvacāryair atas tās tu sūtrakareṇa cāśritāḥ.

It is verse 9 in the Parīśikṣā.

The above is an attempt to construct a crude relative chronology of the Taitt. Śikṣās from the meagre data available. But it is necessary to mention in this connection a work which has not been sufficiently brought to the notice of modern scholars, viz. the Vaidikābharana.¹ It is an illuminating work on the Śikṣās in general and the Taitt. Prāt. in particular. It not only quotes many of the extant Śikṣās of the Taitt. school, as shown above, it also cites possibly several more Śikṣās which still remain to be discovered. On advanced subjects like quantity, accent, etc. peculiar to the Śikṣās, its data are particularly valuable, and will be examined in due course.

But its chronology is obscure as usual. The only data given by the author about himself are his own name,² Gārgya Gopāla Yajvan, the name of his work - the Vaidikābharana, and another work, viz. Svarasampad.³ Burnell⁴ mentions another treatise by the same author, viz. the Pitrmedha-bhāṣya, in the beginning of which he merely mentions his name. There is said to be another⁵ work by the same author, viz. the jñānadīpa, a commentary on the Vṛttaratnākara, in which he quotes Śrīnātha, who, according to Raṅgācārya, must have lived after the 11th century, as he quotes the author of the Vaijayanti (circa, the 11th century). But we need not look for an upper limit as early as the 11th or the 12th century, for it has been shown above that

¹Published in the Mysore Govt. Oriental Library Series 1907 (Taitt. Prāt.)

²On Taitt. Prāt. I-1.

³On Taitt. Prāt. XIV-29.

⁴Index to Skr. MSS at Tanjore p.16.

⁵Raṅgācārya: Introduction to the Taitt. Prāt. (Mysore) pp.18-19.

the author quotes the *Parīśikeśā*, although he is cited by the *Siddhānta Śikṣā*. His probable date is therefore circa 14th-15th century A.D.

As regards the *Sāma Veda*, three *Śikṣās* may be mentioned:-

(1) The *Nārada Śikṣā* is one of the oldest and the most profound *Śikṣās*. It states its object to be "the treatment of accents in the *Sāmaveda*."¹ This is corroborated by the nature of the text, which,² from pages 394-428 describes accent and its relation to musical notes; then there occurs a break of 3 pages in which other subjects of phonetics as doubling, syllabification etc. are dealt with (428-31), accent is resumed on pages 431-32; again there is a break of 9 pages on extraneous subjects; and accent is again resumed from page 440. These two breaks in the treatise seem to be interpolations which were inserted later in order to make it a complete *Śikṣā*.

As regards its chronology, the treatise is silent about itself, except that its authorship has been attributed to *Nārada*.³ We have therefore to depend upon external evidence for its date. A quotation from it, in which a vowel is compared to a supreme monarch, occurs in the

¹ § 398.

sāmavede tu vakṣyāmi svarāṇaṁ caritaṁ yathā, alpa-grantham
prabhūtārthaṁ śravyaṁ vedāṅgaṁ uttamam.

² The text referred to occurs in § 3.

³ § 398:- śikṣāṁ āhur dvijātīnāṁ ṛg-yajuh- sāma-lakṣaṇam
nārādīyaṁ aśeṣeṇa niruktaṁ anupūrvaśah.

Tribhāṣyaratna.¹ But works considerably earlier seem to refer to it. Thus in the Saṅgīta Ratnākara (circa 13th century²), Nārada has been mentioned as the author of the Gāndhāra-grāma, the third musical gamut, and it states in this connection that there are only two grāmas (musical gamuts) on earth, viz. the Śaḍja-grāma and the Madhyama-grāma; the third, viz. the Gāndhāra-grāma, which it attributes to Nārada,³ "is current only in paradise, and not on earth." Now precisely these three grāmas, including the Gāndhāra-grāma, have been taught in the Nārada Śikṣā,⁴ and there it also explicitly states as the opinion of Nārada that "the Gāndhāra-grāma does not exist anywhere else except in paradise." Again, the Saṅgīta Ratnākara, in another verse,⁵ states concerning modulations (mūrccana) that

¹On Taitt. Prāt. XXI-1. See page 94.

²Clements: Introduction to the study of Indian Music, p.46.

R. Simon: Zur Chronologie der Indischen Musikliteratur, p.154.

³I-4. grāmah svāra-samūhah syān mūrccanādeh samāśrayah
tau dvau dharātale tatra yat śaḍjagrāma ādimah.

.....
gāndhāra-grāman ācaṣṭe tadā tam nārado munih, pravartate
svarga-loke grāmo'sau na mahītale.

⁴ss p.399:- śaḍja-madhyama-gāndhārās trayo grāmah
prakīrtitah, bhūri-lokājjayate śaḍjo bhuvar-lokacca madhyamah
svargān nānyatra gāndhāro nāradasya matam yathā.

⁵I-4-22, 23:-

tāsām anyāni nāmāni nārado munir abravīt, mūrccanottara-
mandrādya śaḍjagrāme' bhirudgatā, āśvakraṇtā ca sauerī
hr̥ṣyaka cottarāyātā, rājanīti samākhyātā r̥ṣiṇām sapta
mūrccanah.

"Nārada has given other names for them, viz. uttara-mandṛā, udgātā, aśvakrāntā, sauvīrī, hr̥ṣyakā and uttarāyātā" - terms which precisely occur in the Nārada Śikṣā.¹ It is probable, therefore, that the author here actually refers to the Nārada Śik. But if this is a fact, the lower limit of its date may be pushed back several centuries before the Saṅgīta Ratnākara, for these terms for modulations attributed to Nārada also occur in Bharata's Nāṭya Śāstra,² and if this tradition regarding Nārada's authorship of these verses was correct, the lower limit for the date of the kernel of this Śikṣā was possibly the 5th century A.D., being the probable date of Bharata's Nāṭya Śāstra.³

But while our treatise seems to be one of the oldest of the Śikṣās, its chronology cannot be pushed back so early as to precede even the Prātisākhya, for it quotes authorities⁴ as Tumburu and Viśvāvasu, who have been mentioned in later or contemporary works, as the Mahābhārata.⁵ It seems to be

¹SS p.400. śaḍje tūttaramandṛā syād ṛṣabhe cābhirudgātā
aśva-krāntā ca gāndhāre tṛtīyā mūrchanā smṛtā, madhyame
khalu sauvirā hr̥ṣyakā pañcame svare, dhaivata cāpi vijñeyā
mūrchanā tūttarāyātā.

²XXVIII-30-31.

āḍav uttaramandṛā syād rājanī cottarāyātā, caturthī śuddha-
śaḍjā ca pañcamī matsarī kṛtā, aśvakrāntā tathā ṣaṣṭhī saptamī
cābhir-udgātā, śaḍja-grāmāśritā hyetā vijñeyā sapta
mūrchanāḥ.

³Winternitz: Gesch. d. Ind. Litt. p.9.

⁴SS p. 442:- tumburu-nārada-vasiṣṭha-viśvāvasvādāyāś ca
gandharvāḥ.

⁵St. Peters. Lexicon. Viśvāvasu occurs as an author of a hymn in the R̥gveda (X-139), but as a Gandharva (in which position it occurs in the Nārada Śik.) it occurs more frequently in the Mahābhārata.

posterior both to the Vamśa Brāhmaṇa and the Sāmavidhāna Brāhmaṇa. It refers to an authority Audabrajik¹ mentioned in the former work, while it follows the latter in its description of the various kinds of music prevalent among the different scales of creation.²

(2) The Lomaśī Śik. makes general but concise observations on doubling. It also refers to Tumburu,³ quoting his opinion on the regulation of exhalation and inhalation during Sāma chants. But as regards its chronology, even its authorship is puzzling. The title of the Śikṣā suggests that its author was a person named Lomaśa. But in its first verse it is stated that the Śik. was "thought out by Gargācārya."⁴ How can the title "Lomaśī" be connected with Gargācārya? Now a MS work,⁵ the Jātakapaddhati, enumerates a list of authorities on Astronomy among whom Garga and Romāśa (along with Vyāsa,

¹SS p.443:- varṇāś ca kurute samyak prācīnaudbrajir yathā
cf. Vamśa Brāhmaṇa III-4 puṣya-yaśā audavrajih.

²SS p.419. krustena devā jīvantī prathamena tu mānuṣaḥ
paśavas tu dvitīyena gandharvāpsarasas tvanū.
cf. Sām. Brāhm I-8. taḍyo' sau krustatama iva sāmnaḥ svaras
taṁ devā upajīvantī yo' vareṣaṁ prathamā tam mānuṣyaḥ etc.

³SS p.461. dakṣiṇo nihartah prāṇo (ā)pānastv anyathā bhavet
savyam pītva' pānasya tumburasya matam yathā.

⁴SS p.456. lomaśanyam pravakṣyāmi gargācāryeṇa cintitām.

⁵Madras MSS Catalogue 1913.

No.374 - Colophon:- romaśaḥ paulāśaścaivacyavaḥ no yavano
bhrguḥ, śaunako' ṣṭādaśa hy ete, jyotiḥ-śāstra-pravarttakāḥ.

Vasiṣṭha etc.) have been mentioned. If the Śikṣā was planned by Garga, may it be supposed that it was executed by another man in the same line, viz. Romaśa or Lomaśa? Or, is the Śikṣā, being a work on phonetics, called Lomaśī or Romaśī after Romaśa, the goddess of speech, mentioned as a daughter of Brhaspati in the Brhad Devatā?¹ The connection of Garga with the Sāmaveda, however, may be suggested by "Gārgya" said to be one of the 13 teachers of the Sāmaveda,² possibly the traditional author of the PaṭayPaṭha of the Sāma veda. But the question of the Śikṣā's authorship and its chronology is still shrouded in mystery.

The Śikṣā recommends the pronunciation of Svarabhakti as a, which represents a geographical area to which Ardhamāga-dhī and Apabhraṃśa belonged, cf. page 226 .

(3) The Gautamī Śik. is ascribed to Gautama, probably in honour of the authority who, according to the Ārṣeya Brāhmaṇa,³ was the seer of the first Sāma. It manifests a close study of doubling and consonant-groups and says, "Gautama has declared that there exists no consonant-group with more than seven consonants."⁴

¹ III-156. prādāt sutām romaśām nāma nāmna brhaspatir
bhāvayavyāya rāīne.

² Commentary on the Caranavyūha (Benares) p.47. asam śakhanam
adhyāpakācāryās trayodaśa-saṃkhyākāḥ dārālo gārgyaḥ
sāvartī etc. cf. H. Sison in a private communication

³ cf. the opening line of this Brāhmaṇa:--"gautamasya parkāu".
transcription in the Sāmaveda gāṇas.

According to Caranavyūha (Benares p.45) Gautamī was one of the nine sub-divisions of the Rāṇāyanīya School.

⁴ Cf. page 185 .

It refers to a "Prātisākhya" in which a consonant-group (yu)-āṅkakaṣv is said to occur, but no such group can be traced ~~out~~ in any of the extant Prātisākhyas.¹ This may suggest that it was posterior to some extinct Prātisākhyas, but the question of its chronology remains absolutely unsolved.

Sāma Veda, and seems to have further developed the teachings of the Nārada Sik. on accent. Thus it speaks of the seven musical notes in the Sāmachants,² of the necessity of moving the hand in the Rg, the Yajus and the Sāma recitations,³ and of the opinion, attributed to Kapila, that the first two and the last two notes of the musical scale were sung in the Vedas.⁴ The Nārada Sik. on this point gives nothing that may be common to all the Vedas, it has only specified the kinds of musical notes confined to each particular Veda.⁵ Again, verses 9-12, describing the nature of notes in the musical scale, seem to be the same as those given in the Nārada Sik.,⁶ slightly modified.

1. Traced out by Bhagwat Datta, in the index to his edition of the Māṅgalya Sik. 1931.

2. Verse 7 SB:- sapta svarāḥ sa gīyante śāntavān
sāmagair vudhah.

3. 32 B. (11d): Rg-Yajus-Sāmagaḍīni śānta-gīyanti
yān vudhah.

¹ It is possible, as Prof. R. Simon in a private communication suggests to me, that this unwieldy consonant-group was the transcription of a musical phenomenon in the Sāmaveda gānas, though there are no indications of such consonant-groups in the gānas, yunkaṣv e.g. is written in the gānas as yū² ⁴śūva
(Sāmaveda B.I. Edition I.1.3.5.).

The Śikṣā belonging to the Atharvaveda is the Māṇḍūkī, but although connected with the Atharvaveda owing to the copious number of quotations¹ from that Veda occurring therein, it is particularly interested in accent common to all the Vedas, especially the Sāma Veda, and seems to have further developed the teachings of the Nārada Śik. on accent. Thus it speaks of the seven musical notes in the Sāmāchanta,² of the necessity of moving the hand in the Ṛg, the Yajus and the Sāma recitations,³ and of the opinion, attributed to Māṇḍuka, that the first two and the last two notes of the musical scale are sung in the Vedas.⁴ The Nārada Śik. on this point gives nothing that may be common to all the Vedas, it has only specified the kinds of musical notes confined to each particular Veda.⁵ Again, verses 8-12, describing the nature of notes in the musical scale, seem to be the same as those given in the Nārada Śik.,⁶ slightly modified.

1. Traced ~~ent~~ by Bhagvad Dattā, in the index to his edition of the Māṇḍūkī Śik. 1921.

2. Verse 7 ṢṢ:- sapta svarās tu gīyante sāmabhiḥ
sāmagair budhalḥ.

3. 32 b. Ibid: ṛg-yajuh-sāmagādīni hasta-hīnāni
yah paṭhet.

4. Verse 17. prathamāv antimā caiva varttante
chandasi svarāḥ, trayo madhyā nivarttante māṇḍukasya
matam yathā.

5. Cf. ṢṢ pp. 397-398.

6. Cf. ṢṢ pp. 407-408.

As regards its date, then, its upper limit may be assumed as the 5th century A.D.; the probable date of the kernel of the Nārada Śik., but it seems to be much later than that date. For it contains a good deal of material common to some of the Śikṣās of the White Yajur Veda, e.g. pronunciation of y and v in different positions (verse 87), the reference to the woman of Surāstra pronouncing the nasal sound raṅga (verse 112) etc., and so is either contemporary with, or posterior to, the Yājñ. Śik., circa the 10th century A.D.

The above chronology of the Śikṣās has been determined from the standpoint of the form in which we possess them at present, and it has been shown that the latest of the Śikṣās belong to a period as late as the 12th-15th century A.D. But this does not necessarily indicate that the matter of these Śikṣās is also an equally recent production. If some of them were composed during the medieval period, a considerable portion of their material was most probably a traditional record of phonetic observations of much earlier ages. For it is hardly likely that many of the opinions—as on abhinidhāna in the Cār. Śik. and on the divergent pronunciation of y and v in several Śikṣās (see pages 212ff)—record contemporary pronunciation of spoken Sanskrit. The pronunciation in question belonged to a much earlier, transitional stage, which is confirmed by the development of the middle and the modern Indian languages. The motive for the injunction of the older pronunciation was in several cases—e.g. when the Cār. Śik. said that consonants in Sandhi were always to

be doubled- conservative, to guard the traditional pronunciation against provincialism. Moreover, the fact that nearly all the Śikṣās have been composed in a metrical style, suggests the possibility of earlier works in the Sūtra or prose style, of which the Śikṣās were popular compendiums for ready reference. Nevertheless, there is nothing against the supposition that even in the medieval period, some portion of the Śikṣā literature was an original contribution. When, for instance, the Śikṣās offered various details on Svarabhakti after the Svarita accent (see pages 141ff), the authors presumably refer to their own pronunciation of these sounds.

Geographical Data.

While the chronological material of Indian phonetic literature is poor, its geographical data are hopelessly meagre. In the whole domain of this literature of 55 books examined by me, only five geographical names have been mentioned (1) Śūrāṣṭra, - a stock-example of many Śikṣās, so that we can not specify the original source with which the place may be connected (2) Puṣkara (Cf. page 55) - a holy place of pilgrimage mentioned by the Pārāsārī Śik. (3-5), the Yamunā (Kāṁdī), the Ganges and Sarasvatī mentioned by the Yājñ. Śik.¹ These four places of pilgrimage, so commonly connected with all parts of India,

1. ŚŚ pp 4-5. kāṁdī saṁhitā jñeyā padayuktā
sarasvatī, kramenāvartayed gaṅgā saṁbhor bānī tu
nanyatha.

could be mentioned by anybody, however distant he may actually have been from those places.

Variations of pronunciations mentioned in the following pages, however, may help us to construct a number of hypothetical geographical data of primitive and middle Indian as observed in Śikṣā literature—a subject for further investigation. The following lines for the construction of these hypothetical isoglosses of the future may be provisionally suggested:-

(1) Pronunciation of r and ṛ mentioned as dental or alveolar by the Prātisākhya, but cerebral by the Pāṇ. and the Āpīśālī Śikṣās may suggest the former's connection with the western, and the latter's with the eastern, dialects.¹

(2) The Taitt. Prāt.'s view of the Yamas as belonging to the succeeding syllable (nasalization being weaker in this case) and that of the Vāj. Prāt. as belonging to the preceeding syllable may connect the former with the Ardhamāgadhī-speaking areas, and the latter with the other areas.²

(3) The Taitt. Prāt.'s rule³ regarding the insertion of a plosive between a fricative and a nasal consonant may connect the pronunciation with the Aśokan Central (or Magadhan) dialect.

(4) The prescription of the Lomaśī Śik. regarding

1. Cf. p. 15.

2. Cf. p. 134.

3. Cf. p. 269.

the pronunciation of Svarabhakti¹ as a may connect it with areas to which ~~Maharashtra~~ ^{Afakhrāṣā} and Ardhamāgadhī belonged, and the Yājñ. and the Māṇḍūkī which prescribed it as i, with the other areas.

(5) The Vāj. Prāt.'s prescription² of pronouncing intervocalic j as y (so that aja-was to be pronounced aya) may connect it with the western dialects.

(6) The rules³ of the Śikṣās of the White Yajur Veda regarding the pronunciation of y and v in certain positions may connect them with Madhyadesā- the Sauraseni-speaking area.

(7) Similarly the Vāj. Prāt.'s prescription⁴ that the cerebral l and lh, the Jihvāmūliya and the Upadhmanīya did not exist among the Mādhyandinas may suggest that the above-mentioned area was meant.

1. Cf. p. 226.

2. IV-164. svarāt svare pare samānapade jo yaṃ na tu rkāre.

3. Cf. Chapter VI, p. 216.

4. VIII-29. tasmin l lh-jihvāmūliya-nāsikya na santi mādhyandinām.

The Syllable

The most usual term used in Sanskrit works for the syllable is aksara, which the Pāṇinīyāsāstra ¹ explains as that which does not move as an adjunct to another; in other words, which stands alone.

The essential element of the syllable was said to be the vowel. For a consonant, according to the statement of the Tribhāṣyaratna ², cannot stand by itself; it is dependent, while the vowel is independent. There is no doubt, says the same authority, that a consonant has an existence of its own. For, firstly, meanings of words change with consonants, e.g. in the words kūpa and yūpa, the vowels are the same, but the consonants are different, and so the meanings of these words differ. And, secondly, the articulation of a consonant takes some time ³, which, according to Indian Grammarians, was equal to half the time taken by a short vowel, i.e. half a mora. It was only in quick speech that the duration of a consonant was merged in that of a vowel. In intermediate and slow speech,

1. MS. No. 924 Madras; v. 9. Also the Vaidikābharana on the Taitt.

Prāt. I.2. na kṣarantītyakṣarāṇi kṣaraṇam anyāgatayā calanām.

2. nana kūpo yūpa ityātau vyañjanamevārthavisesabodhakam iti svaro vyañjanāṅgam

3. kim na syāt ? vyañjanam kevalam avasthātum na śaknoti kintu sūpekṣam; svaras tu nirapekṣah. Taitt. Prāt. XXI. 1.

3. svarasamsrṣṭasya vyañjanasya svarakāla ekakālo drutavṛtttau na tu sarvatretyarthah. Vaidikābharana on Taitt. Prāt. XXI.1.

svayam rājante svarā anvag bhavati vyañjanam iti

however, says the *Vaidikābharaṇa*, a consonant does distinctly preserve its quantity, though in quick speech its quantity is not distinctly perceived, just as in a mixture of milk and water, it is only the milk that is distinctly perceived.

A consonant, then, according to the Indian Grammarian, is not absolutely dependent upon the vowel. And yet, as the *Nārada Śikṣā*¹ points out, consonants are like pearls in a necklace, but the thread which supports them is the vowels. Consonants, according to *Patañjali*², share, in a sense, in the accent of vowels. For, says *Patañjali*, although accent is not a quality of the consonant, it is the quality of the vowel; yet by proximity to the vowel, the consonant also acquires this quality of the vowel, just as a piece of white cloth between two red pieces of cloth acquires their colour, or just as a pot acquires luminous power by the light of the lamp. The accentuation of a vowel can be perceived without the presence of a consonant, but, says *Patañjali*, without a vowel a consonant cannot even be pronounced. The Sanskrit word for the vowel, *svara*, has been derived by *Patañjali* as *sva - ra*, which literally means 'self-ruling', (*svayam rājate*),

1. svarapradhānam traiśvaryam ācāyāḥ pratiḥjanate, manivad
vyañjanam vidyāt sūtra vacce svaram viduh S'S p.436.
2. naite (anudāttēdayaḥ) vyañjanasya guṇaḥ, asa ete guṇāḥ
tatsamīpyāt tu vyañjanam api tadguṇam upalabhyate tadyathā
dvayo raktayor vastrayor madhye śuklam vastram tadguṇam
upalabhyate. On Pāṇini I.2.29 Kielhorn's Ed. 1880, Vol. I p. 206.

³ svayam rājante svara anvay bhavati vyañjanam 'iti' off cit.
p. 206.

while the Mārada Sikaṣā compares the vowel to a powerful monarch and the consonant to a weak king, the latter submitting to the force of the former.¹

In my opinion, the vocalic basis of the syllable, maintained by Indian Grammarians, was on the whole sound. There is no doubt that even a consonant, if pronounced with sufficient prominence, may become an independent syllable. For the basis of a syllable is prominence, not mere sonority. This prominence has three elements, viz. length, breath-force and sonority. A consonant has indeed less sonority than a vowel has, but if one or both of the other two elements, viz. length and breath-force, are particularly strong in its articulation, the consonant may be prominent enough to form an independent syllable. Thus in Japanese s in arimas, ('is' or 'are'), j in jka ('deer'), k in ka ('grass') and m in ma ('horse') are independent syllables, as they are pronounced with unusually great prominence of breath-force and length. Similarly in English l in 'funnel', n in 'mutton' are independent syllables. And in colloquial rapid speech in German n in 'wir könn' (en) and m in 'wir komm' (en) are independent syllables.² A consonant may, then, occasionally become an independent syllable. Nevertheless, I am of opinion that a vowel is a more important basis of syllabication than a consonant is. For in actual speech

1. durbalasya yathā rāṣṭram harate balavān nrpeḥ, durbalam vyañjanam tad-vad harate balavān svarap.

S'S, p. 436.

² I owe the above examples to Miss Armstrong of the University College, London.

the element of sonority is more predominant than those of length and breath-force in constituting the prominence of a sound, and the vowel being more sonorous than a consonant, tends therefore to possess greater prominence than a consonant. Hence the more sonorous sounds, viz. vowels, rightly appeared to Indian Grammarians as convenient bases of syllabic division¹.

But if our Grammarians implied that a vowel was absolutely the essence of a syllable, they were evidently wrong, for it is now an established fact that a consonant or a group of consonants can form an independent syllable, cf. the examples given above. The language of Indian Grammarians in this connection implies that they did not dogmatically maintain the vocalic basis of the syllable in the absolute sense, for they speak of the vowel as a more powerful monarch and of the consonant as a weaker king. But it is evident that they were inclined on the absolute side. Moreover, it did not definitely occur to them as a general principle that a consonant or a group of consonants could form an independent syllable.

There is no doubt that the syllabic nature of "r" and "l" did strike the Indian phoneticians, but even here it was in the form of vowels that "l" and "r" appeared to them as constituting independent syllables. Thus according to the Bhāradvāja

Sikṣā "l" was never a vowel in the beginning or at the end of a word, but it was vocalic in the medial position, as in the word klpta². Again, the Svaravyañjana

1. cf. Meillet: *Langues indo-européennes* (3rd Edition p.106) "The vowel belongs entirely to the syllable of which it is the centre".

2. udāhṛtaḥ klptasabdo na padādyantayoḥ svarah. 34 (Sieg's Edition)

Śikṣā is exclusively devoted to the question when "r" is a consonant and when it is a vowel; for details see Appendix A.

In the light of the above facts, however, it seems to me probable that the Indian terms "Svara" and "Vyañjana" did not exactly correspond to the "vowel" and the "consonant" of modern phonetics. The Indian terms ^{may} ~~might~~ have denoted "a syllabic sound" and a "non-syllabic sound" respectively. For the essential difference between "Svara" and "Vyañjana" lay in their relative dependence. The "Svara" was said to be "self-dependent", while the "Vyañjana" (literal meaning 'manifested by another', 'accessory') was dependent upon the "Svara". So when the consonants "l" and "r" and sometimes even "h" (according to the Sarvasamanta Śikṣā, as a subsequent discussion will show, cf. page 138) were noticed as being independent sounds and were designated as "Svara", the general principle that a consonant could also form an independent syllable ^{may} ~~might~~ have been recognised by Indian Grammarians if they actually meant by "Svara" "a syllabic sound" and not necessarily "a voiced sound accompanied by a free passage of air through the mouth, and not producing audible friction" ² which the modern term "vowel" signifies.

2. Daniel Jones: English Phonetics: 2nd Edition p.11.

cf. the explanation of the Vaidikābhāṣya on Yaitt. Prāt. 1-6 "pareṇa svareṇa vyajyata iti vyañjanam". This sense of the suffix ana is here possible, cf. Böhtlingk on Pāṇini III-3-113.

APPENDIX A_x

The Svaravyañjana Śikṣā on "r" as a consonant and "ri" as a vowel.

The Svaravyañjana Śikṣā is a short treatise of about 3 pages. It is MS. No. of 1875-76 belonging to the Bhandarkar Oriental Research Institute, Poona. The MS. is unfortunately corrupt and mutilated, and I have not been able to secure another copy of it anywhere else.

The object of the work is to show when "r" is a consonant and when it is a vowel. The work follows the Rg Prāt., for it not only quotes in full two verses from it (IV 8-9), but also uses throughout the terminology of this Prātisākhya, such as various terms of Sandhi, niyata, bhugna, kṣaipra (Rg Prāt. II.8), anuloma Sandhi (Rg Prāt. II.3) etc. The work is post-Pāṇinian, for it quotes Pāṇini VII.4.28 and VI.1.168.

The treatise is divided into six sections or vargas.

I. The first section points out cases in which "r" of "ri" is a consonant. In the various phases of Riphita Sandhi, i.e., in which Visarga may be either traced to "ṛ" or can be changed to "r" (Rg Prāt. IV.9), the "r" is a consonant. Thus in the combination prātarīndran (= prātar īndran), the "r" of the syllable "ri" will be a consonant. It will be also a consonant in Paripanna Sandhi which, as the Rg Prāt. (IV.5) explains it, is that in which "m" is changed into an Anusvāra before "r" or a spirant.

Thus in hotāram ratnadhātaman, the "r" following the Anusvāra will be a consonant. On the other hand, as the author points out in Section IV, "r" as a vowel cannot allow an Anusvāra before it, e.g. in samrtubhih¹.

According to the author, "r" is a consonant, before "y" ². This seems ~~to me~~ to be a striking observation. For it is a fact that in Sanskrit we do not find any group "r" + "y", "r" always changes into "ri" before "y", and the treatise in the third section quotes Pāṇini VII.4.28, according to which the final "r" of a verb is changed into "ri" before "y". cf. Wackernagel: p.199 "r" appears to have phonetically become "ri" before "y".

"r" in various forms of the numeral tri is a consonant, except in tritiya- and tisr. The Śikṣā³ then enumerates a list of words in which "r" is a consonant and in which it is likely to be confused with "r", as ripuh, krivih, krimih, riśādasah, etc.,

1. nāpyanusvārah samrtubhih. 2 (a) yakāre ca riśoktau ca
(b.) pravobhriyanta ityātau riśayeglinkaviti smrtah.

3. The following is the text of the first section:-

Om namo brahmane rephān naloṇe niyate prasritākameyoh krame.
ralesmopahitoṃhrasvo mavarjam paripannage abhyāse triti
samkhyā yastrtiyatīrvarjitah. rinacchrito ripuh krimih krivih
vriśo riśādasah. trivistatristujātasya^(?) tripadyas tridhā
tritah. śri śri^(va?) prayoktu (?) yastriṃsat krivirādiṣu sopadā
riśoṭha riśato riśyāssritah saptakavarjitah yakāre ca
riśoktau ca ātau cāmpadā ripuh. rinagnistam ririkeśmo
rihate'tha riśādasah. ityuktam vyanjanam sarvam idānīm
ucyate svarah. varṇah 1.

II. The second section specifies cases in which "r" is clearly a vowel, viz. after an initial group of consonants or ^{before a} ~~consonant-group, of which the last is~~ ~~in the case of a succeeding conjunct consonant,~~ the penultimate sound of the stem ~~is a consonant~~¹. ~~I think~~ This is an interesting observation, for an initial consonant + consonant + "r" as a consonant does not very commonly occur in Sanskrit, but the author's observation is not universally borne out by the facts of the language, for side by side with sprakayāmi there do exist in Sanskrit optional forms like sprakṣyāmi, where "r" is a consonant, although preceded by a consonant-group. Nevertheless, if the author here refers to the language of the Vedas in general and of the R̥gveda in particular, his observation is probably sound, for ~~I have not come across~~ ^{do not occur} forms like sprakayāmi in the Vedas. ^{(Sāṃhitās)²} Again, the observation that "r" is a vowel when followed by a consonant-group, provided that the penultimate is a consonant, is also interesting, and ~~I think~~ this is borne out by forms like tr̥pta where "r" is a vowel. But what about forms like tar̥pta which Pāṇini (VI.1.59) allows? Does the author's observation indicate that "r" in tar̥pta was vocalic, although orthographically written as a consonant? ~~I hardly think~~ ^{would hardly} Sanskrit allowed two such vowels "a" and "r" to stand together within a word without undergoing Sandhi. The Siksā mentions

1. vikramo nāpyanusvārah rkārah sa sphuṭah svarah saṃyogāc
ca parah pūrvah saṃyoge vyanjanopadhak.

Section II.

² They occur in the Brāhmaṇas, cf. Wackernagel, p. 213.

a couple of negative conditions which are necessary for "r̥" being a vowel. (1) "r̥" should not be preceded by a Visarga that cannot be changed into a hissing fricative -- probably, ~~because~~ because the Visarga in this case will be dropped. (2) It should not be preceded by an Anusvara, as already mentioned above. But it states that a hiatus or a semi-vowel may precede it. It seems ~~to be~~, however, that there^o were rules of Sandhi in the light of which the author has tried to determine the position of "r̥".

Section III enumerates some further details of cases in which "r" is a consonant. Thus the "r" in mārtva, marda, resana^ā and rise is a consonant, and so is the "r" in bhrivanta, and the author quotes Pāṇini VIII.4.28 in this connection¹.

In conclusion, the Śikṣā makes an interesting observation that "r̥" both in "r̥" and "r" when not preceded by any consonant and when followed by a consonant is a 'concentrated r' (samcīto repheh). Thus "r" in rsak^(?) trita^ā and risada^ā, rija^ā and rija^ā is a 'doubtful consonant' (sandigdha-vyanjana) and the author calls it 'concentrated r'.

According to the author's theory, then, "r̥" in the word samskrta, preceded as it is by a consonant group is a clear vowel "r̥", but "r" in rija^ā and rija^ā was a

Section III. devo mardarisādasah, martyam rise risato
narisyed^(?) gauri abhisritah. prabhoḥbhrivanta ityadau
rinayaglinksviti smrtah budhyo (?) risa.....

'concentrated r'.¹ According to the author's theory, then, "r" in the word samskr̥ta-preceded as it was by a consonant-group was a clear vowel "r" but in riyā and riñase wavered between a vowel and a consonant and he calls it 'concentrated r' -- probably, ~~I think~~, because, like an abstraction, it did not leave a distinct impression on the hearer as to whether the sound in initial "r" and ri was vocalic or consonantal. When, however, "r" was preceded by a consonant-group and followed by another consonant as in the word samskr̥ta, it had a greater chance of being syllabic, as a consonant + consonant + r + consonant was a too unwieldy combination in Sanskrit.

Now as regards the initial consonant, I think its syllabification as pre-syllabic is quite acceptable and does not require any discussion, for it is evident that the off-glide of the initial consonant in riyā must go with the succeeding vowel i. But the case of an intervocalic consonant is not so simple. To which should it belong, to the preceding or the succeeding syllable? Indian Phoneticians, like Greek Grammarians², connected it with a succeeding vowel. Was it conventional convenience or was it based on actual observation of phonetic phenomena? It is hardly likely

1. Section III riyāñaseriti cātha ityābhyāsa-sandhigdham
(sic) riñani ririgiti samcīto rephah r̥ak
trita iti samcīto rephah risyah risadasa iti samcīto
rephah.

RULES OF SYLLABIC DIVISION

In the above pages I have shown that, in the opinion of Indian Grammarians, the basic principle of syllabic division was vocalic. I now proceed to examine the detailed rules of syllabic division as prescribed by our Grammarians.

Syllabication of Consonant + vowel.

According to the Rg and the Taitt. Prātisākhya¹, a consonant followed by a vowel, whether that consonant is initial or inter-vocalic, will go with the succeeding vowel. Thus the consonants in dāna- and inān will go with the succeeding vowel ā, and the syllabic division will be dā/na, i/nān. Now as regards the initial consonant, ~~I think~~ its syllabication as prescribed is quite acceptable and does not require any discussion, for it is evident that the off-glide of the initial consonant in dāna- must go with the succeeding vowel ā. But the case of an intervocalic consonant is not so simple. To which should it belong, to the preceding or the succeeding syllable? Indian Phoneticians, like Greek Grammarians², connected it with a succeeding vowel. Was it conventional convenience or was it based on actual observation of phonetic phenomena? It is hardly likely

1. Rg Prāt. I.15, Taitt. Prāt. 881.2.

2. According to the Greek Grammarians also, as Prof. N. Stuart Jones (Classical Review Vol.15) points out, every consonant standing between two vowels belonged to the succeeding vowel.

that apa should have been in all ancient Indian dialects pronounced as a-pa and in no case ap-a, and it is at the same time scarcely likely that this variation of pronunciation should have escaped the observations of such subtle phoneticians as Indian Grammarians were. The syllabic division a-pa, then, ^{may} ~~might~~ have been maintained for the sake of conventional uniformity or elegance. Even in the light of modern research a hard and fast syllabic division a-pa or ap-a would be purely conventional, for an intervocalic consonant is divided between two vowels, its on-glide belonging to the preceding and its off-glide to the succeeding vowel. If the preceding vowel is unstressed, and the succeeding one is stressed, then the consonant will incline more to the succeeding vowel and vice versa. That this variation due to accent was noticed by Indian Phoneticians will be evident presently in detail. Thus Uvata² illustrated the fact that in pronouncing agnin, the second "g" will optionally partake of the accent of "i" or the non-accentuation of "a", i.e. the syllabic division will be optionally ag-gnin or agg-nin. This variation, however, has been mentioned only in connection with double consonants.

Syllabication of Final Consonants.

Our Grammarians lay down that the final consonant will follow the preceding vowel.³ ~~I believe that~~ This

1. Meillet: *Langues indo-européennes*, 3rd Edition, p.106.

2. On Reg, Prāt. I.15.

3. Taitt. Prāt. XII. 3, ~~Reg~~ Prāt. I.15.

observation was on the whole sound. For it is now an established fact that the final consonants of Sanskrit were implosive¹, so that they eventually disappeared in Pāṇi and Prākṛit. With so much laxity in their articulation they were not likely to be independent syllables. But, as ^{will be} I have shown on the ^{5th} chapter (on Doubling)², the evidence of the Atharv. Prūt. and of the Cārāyaṇīya Śikṣā, and the testimony of Prākṛit words like jugu^hcc^ucc^hā, ~~mech^hā~~ ^{ūcc^hā} indicate that dialects existed in which the final consonants were pronounced double, as they are in some of the Pānjābi and Lāhndi dialects at the present day, cf. sadd 'call', chadd 'leave', ghatt 'throw'. It is not unlikely, therefore, that isolated dialects existed, even in the times of our Grammarians, in which the final consonant ^{may} ~~might~~ have been pronounced sufficiently long to constitute an independent syllable.

¹ Cf. p. 232.

² Cf. pp. 182, 183.

1. In Prūt. I. 15. Śikṣā 1. 15. 1. 15. According to the former work, this division was optional: i.e. it could be $\pi\iota\sigma/\pi\sigma$ or $\pi\sigma/\pi\sigma$.

2. This syllable division corresponds to Homeric Greek, which divided $\pi\alpha\tau\pi\iota\sigma\alpha$ as $\pi\alpha\tau\pi\iota\sigma/\alpha$. For Post-Homeric Greek divided it as $\pi\alpha\tau/\pi\iota\sigma$. J. P. Postgate: Greek Accentuation p. 25.

Syllabication of Consonant-groups.

As regards consonant-groups, the most general rule is that the first member of the consonant-group will belong to the preceding vowel: thus pitre will be divided as pit/re and not pi/tre. mukta will be divided muk/ta and not mu/kta¹.

~~I am of opinion~~ that Sanskrit had a predominant tendency to this syllabic division prescribed by our Grammarians.² ~~This~~ is corroborated by the doubling which the initials of Sanskrit consonant-groups undergo. The most fundamental rule of doubling prescribed by the Prātisākhya is that the first member of a consonant-group, if preceded by a vowel, is doubled. In fact consonants are not doubled in Sanskrit except when members of a consonant-group, cases of doubling of intervocalic consonants being rare: for details see the 5th chapter (on Doubling). ~~Now I am of opinion that~~ The basis of this peculiar doubling was the tendency to close the first syllable of every word. The need felt for this doubling indicated that the genius of the language did not allow a syllabic division pu + tram, for it required another consonant to close the syllable pu, so that the actual

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1. Rg Prāt. I.15. Taitt. Prāt. XXI.4. According to the former work, this division was optional: i.e. it could be pit/re or pi/tre.
 2. This syllabic division corresponds to Homeric Greek, which divided ναρπίδα as ναρ/πίδα.
Post-Homeric Greek divided it as ναρ/πίδ2.
J.P. Postgate: ^{A short guide to} Greek accentuation p.24.

syllabic division was either put/tram or putt-ram.

This is corroborated by several Vedic MSS, which generally double the first member of every consonant-group.

Thus Manuscript 5350 (British Museum) of the White Yajurveda consistently doubles the initial plosive consonant of every consonant-group, not only when preceded by a syllable belonging to the same word, e.g.

rakksah (I.7.) ṣakksuh (II.16) asvinorrvāhubbhyām (I.21)

but also when preceded by a separate word, e.g. upadadhāmi

bbhrātrvyāya (I.17), vvanaspattyo agrāvāgrāvāsi (I.14).

Further examples:-

<u>vvivinakktu</u>	(I.16)	<u>samāksinayoh</u>	(IV.23)
<u>eittpatih</u>	(IV.4)	<u>yukktah</u>	(VIII.33)
<u>punātu vvākkpatih</u>	(IV.4)	<u>yuttkāmah</u>	(IV.4)
<u>punasocakksuh</u>	(IV.15)	<u>ḍakksāyāh</u>	(X.3)

Similarly Manuscript 2391 (India Office) of the same Veda, cf.

<u>varunau ttvā</u>	(II.16)	<u>vviddyāñca</u>	(XL.14)
<u>addya</u>	(V.3)	<u>puttrenā</u>	(XL.17)
<u>yukktena</u>	(XI.2)	<u>svāhā pprānebbhyah</u>	(XXXIX.1)
<u>tena ttvakktena</u>	(XL.1)	<u>diggbhyah svāhā</u>	(Do. 2)
<u>lippyate</u>	(XL.2)	<u>pravrkktah</u>	(Do. 5)
<u>prettya</u>	(XL.3)	<u>sappta</u>	(Do. 6)
<u>śśśvatibbhyah samābbhyah</u>	(XL.8)	<u>lomabbhyah</u>	(Do.10)
<u>amhantamah ppraviśanti</u>	(XL.9)	<u>tapptāya</u>	(Do.12)

abhirātiggahne (XXXVIII.8). The third "g" here is evidently a clerical mistake, the corresponding reading in the British Museum Manuscript being abhirātiggahne.

iyokt^e (XXXVI.19)

akktubhih (XXXV.1)

~~I have noticed~~ Similar doublings ^{occur} in the Gupta inscriptions also, although the doubling in these inscriptions most frequently occurs in the groups plosive + "r" or aspirated consonant + semivowel, as the following examples will show:

Plosive + "r"	Aspirated consonant + semivowel
<u>parākkrama-</u> (Ins.No.1)	<u>addhyeyah</u> (No.1)
<u>kāvyākkriyābhih</u> "	<u>sāddhvasādhuh</u> (DO.)
<u>vikkrama-</u> (II)	<u>patthya^m</u> (XVIII)
<u>puttrasya</u> (X)	<u>maddhyamena</u> (XXII)
<u>puttrasya</u> (XII)	<u>ayuddhyata</u> (XXII)
<u>vidyādhari^ah priyatamā</u> (XVII).	

Another very frequent occurrence of doubling in these inscriptions is that of the plosive in the group "r" + plosive, as the following examples

1. Fleet: Gupta Inscriptions.

instances as krura (No. VI), krura (IV), krura (R.VII), ghama (I etc.) The traditional syllabic division of krura which served as the original background must have been therefore put/(t)ra. That the doubling in Prakrit

¹ Cf. Cunningham, p. 69; Hultzsch, p. 99.

will show:- presented the original division may be

ārttham (XIV) mārggam (XVII) ārtta-varṅga- (XVIII)
ārttiḥ (") svarggam (") āvarjjana- (XXXIII)
darppaḥ (") dīrgha- (XVIII) durggane (XXIV)

There is no doubt that in the above examples the first member of the group, viz. "r", has not been doubled, and it may prima-facie appear as if it was an exception to the rule of syllabication given above; but a closer reflection will show that even here the same tendency has worked, viz. that of keeping the first syllable close, so that svarggam was divided as svarg/ḡam. The first syllable here could not be closed with "ṛ", because there exists no word in Sanskrit that ends in "ṛ" at the end of a sentence.

This tendency is further corroborated by the peculiar assimilation in the living dialects. Thus in the case of the consonant-group belonged to the succeeding syllable, several consonant-groups, Prākṛit has, unlike French, kept up the initial plosive of consonant-groups, although it has lost the plosive in the final position. Assimilations like putto, pitte for putrah, pitre indicate that Prākṛit maintained the tradition of keeping in pronunciation the first syllables of these words close. Even in Aśokan inscriptions, in which double consonants are generally neglected, ^{may be found} I find such instances as kammē (Edict VI), ammanxi (IV), savvatra (E.VII), dhamma- (I etc.) The traditional syllabic division of putrah which served as the original background must have been therefore put/(t)rah. That the doubling in Prākṛit

¹ Cf. Cunningham, p. 69; Hultzsch, p. 99.

faithfully represented the original division may be corroborated by a negative instance from Italic Languages. ^{av} Howet ¹ has pointed out that ^{original} Latin dialects always divided patrem as pa-trem (contrary to Sanskrit division) and never pat-rem. It was the syllabic division pa-trem which could ultimately pass off into père.

But in the case of the group plosive + plosive, it may prima facie appear as if the corresponding forms in Prakrit do not confirm the rule of syllabication prescribed by our Grammarians. For corresponding to the group plosive + plosive in Sanskrit, the Prākṛit form is -- the second plosive doubled, cf. Skr. bhakta- = Prākṛit bhatta-; Skr. mukta- = Prākṛit mutta-; Skr. mudga- = Prākṛit mugga-; Sanskrit gaṭka- = Prākṛit chakka-. These examples may suggest to the superficial observer that the first member of the consonant-group belonged to the succeeding syllable, because it was assimilated to the succeeding consonant. But a little reflection will show that even here the same tendency has worked, viz., that of keeping the first syllable close, for the succeeding syllable could not begin with a double consonant: the division of bhatta- as bha/тта- was quite unlikely. Hence even here the living dialects reveal the validity of our Grammarians' rule that the first member of a consonant-group belonged to the preceding syllable, so that bhatta- and its corresponding Sanskrit form bhakta- were divided bhat/ta- and bhak/(k)ta- respectively.

Again, the superficial observer may be misled by the non-occurrence of doubling in several consonant-groups in the Gupta inscriptions. I have shown above that the most frequent groups in which doubling has occurred in these inscriptions are:-

- (1.) plosive + "r" (2.) aspirated^d consonant + semi-vowel.
(3.) "r" + plosive.

In the case of other consonant-groups, however, non-doubling in these inscriptions is the general rule, as the following examples will show:-

<u>vidyate</u>	(Inscription No.27)	<u>prāptena</u>	(32)	<u>utksipta-</u>	(33)
<u>anātya-</u>	(")	<u>sapta-</u>	(32)	<u>śabda-</u>	(34)
<u>utpadyamāna-</u>	(" 29)	<u>anyattra</u>	(")	<u>sanutpatti-</u>	(34)
<u>visyandita-</u>	(" 35)	<u>yukta-</u>	(36)	<u>bhaktasya</u>	(36)
<u>samprāpte</u>	(" 36)	<u>vidyotate</u>	(37)	<u>labdha-</u>	(38)

A similar impression may be created by several Vedic Manuscripts. In striking contrast with the Vedic manuscripts mentioned above, several other Vedic MSS. have gone even further than the Gupta Inscriptions in relaxing the orthographical duplication of consonants which are members of consonant-groups. Thus in several MSS. of the R̥gveda and the Sāmaveda doubling is confined only to the group "r" + plosive or "r" + semivowel, while there is no doubling in the group aspirated consonant + semivowel, though the Gupta inscriptions have kept up this doubling. There are several cases in these manuscripts in which there is no doubling even in the group "r" + plosive. The following

examples will show this laxity of doubling in several Vedic Manuscripts:-

MS. India Office 132, 1690, 1691 (Rgveda) and 1283, 2130 (Samaveda)

Cases of Doubling

avaraddhayantu
arppai-
urijam
varddhata-
iyartti
varttani-
avaraddhayan
marddaya
survyam
aryvasya
sarddha-

Cases of Non-doubling

agnim
ratnam
pavitram
atra
adribhih
satyam
dadyan
adhvara-
madhyamāsu
artva-
arkasya
arcibhih
garbha-

These examples may lead the superficial observer to think ^{that} ~~as if~~ a divergent tendency for non-doubling phonetically existed in the spoken languages. But I ~~am of opinion that~~ the evidence of the living dialects is more conclusive on this point, for these dialects most frequently give duplication corresponding to any consonant-group (except where there is Svarabhakti). ^{There are a few} ~~I know of~~ only ~~two~~ forms, ^{e.g.} ~~viz.~~ an isolated Prākṛit form rāi for rātri- (side by side with ratti) and ^u ~~Sariya~~ pūa for putra- in which doubling has not taken place. For further examples cf. Pischel p. 76.

22.

then,

In my opinion, then, The non-occurrence of doubling in perhaps the majority of manuscripts and inscriptions may be explained on the ground that doubling was so common in actual pronunciation that several authors and scribes knew it to be evident to the reader and did not think it necessary to transcribe it. Manuscripts of the 'orthodox' type however, faithfully kept it up. The living dialects and the orthodox MSS, then, indicate that whenever a consonant-group occurred in actual pronunciation, the preceding syllable was kept close, and that the observation of Indian Grammarians regarding this point was sound.

out that the second consonant will optionally share the accent of the preceding or the succeeding syllable. Thus in āttvā, the first "t" belongs to the preceding syllable and thus shares the high accent of "ā", but the second "t" can optionally belong to the preceding or the succeeding syllable and so can share the high accent of the preceding "ā" or the low accent of the succeeding "vā", the syllabic division being optionally ātt/vā or āt/vā. Again, in agnin, the first "g" of agnin will belong to the preceding syllable, and so will share the low tone of "a", but the second "g" can optionally belong to the preceding or the succeeding syllable and so share the low tone of "a" or the high tone of "i", the syllabic division of agnin being optionally agg-nin or ag-nin. According to the Vā. Prāt.,

¹ I-15

² I-104 ~~I-104~~ 'Kramajaspā' I-105 'Cāmāpobhāva sparse'

Syllabication of Doubled Consonants.

As a general rule, consonants in Sanskrit could be doubled only when members of a consonant-group: for details see the ⁵chapter (on Doubling). So the rule regarding the syllabication of doubled consonants presupposes that the doubled consonant in question is followed by a consonant or a semi-vowel. Now there was a divergence of views regarding the syllabication of this doubled group.

According to the Rg Prāt. the second member of the doubled group can optionally belong to the preceding or the

succeeding syllable, and Uvata in this connection points out that the second consonant will optionally share the accent of the preceding or the succeeding syllable. Thus in āttvā, the first "t" belongs to the preceding syllable and thus shares the high accent of "ā", but the second "t" can optionally belong to the preceding or the succeeding syllable and so can share the high accent of the preceding "ā" or the low accent of the succeeding "ā", the syllabic division being optionally ātt/vā or āt/tvā. Again, in agnīm, the first "g" of agnīm will belong to the preceding syllable, and so will share the low tone of "a", but the second "g" can optionally belong to the preceding or the succeeding syllable and so share the low tone of "a" or the high tone of "i", the syllabic division of agnīm being optionally agg-nīm or ag-gnīm. According to the Vāj. Prāt.,

¹ I-15

² I-104 ~~I-104~~ 'kramajas'ca', I-105 'tasmāc'potaram sparse.

however, the syllabication of doubled consonants varied according as they were followed by a consonant (except a fricative) or a semi-vowel. If the doubled group was followed by a consonant, then both the members of the doubled group belonged to the preceding syllable, e.g. agnin, pārsanyā were respectively to be divided as agg-nin, pārs-nyā. If, however, the doubled group was followed by a semi-vowel, then only the first member belonged to the preceding syllable, e.g. varasyāya and pārsāvan were respectively to be divided as var-syāya and pārs-āvan.

Let ~~us~~ now examine the validity of these observations.

(1) Strictly speaking, division of a doubled consonant is possible only when the first consonant explodes before the second, e.g. if in the articulation of the word agnin, the first "g" exploded before the second "g", the syllabic division could have been ag/-/gnin. But I do not know of any language in which during the articulation of a doubled consonant the first consonant explodes before the second. This explosion, as Professor Daniel Hones tells me, does not occur even in Italian, in which distinctly double consonants are pronounced, as in "ditto". Moreover, as I have explained in detail in the ^{8th} chapter (on Abhinidhāna), Indian Grammarians also did not maintain the explosion of a consonant within a doubled group. Thus even Vyāḍi, who was opposed to the theory of Abhinidhāna, held that incomplete plosion was possible only in the case of a doubled

consonant. And the validity of their view is corroborated by the fact that doubled aspirated consonants in Sanskrit, as perhaps in all languages, were pronounced only with a single explosion.

If therefore, the Rg. Prāt. implied that the optional division of agnīm was ag/-/gnīm in the above sense, ~~the~~ ~~division~~ the division prescribed was ^{im}probable.

(2) Another possible division of agnīm was ag/gnīm. This division implied that although the consonant pronounced was only a single long consonant, the hearer heard a fall of prominence at the on-glide of "g". This fall of prominence was continued in the form of a long silence during the contact or 'stop' stage, and there was a rise of prominence again at the plosion of "g". The hearer then seemed to hear two "g's", the first belonging to the syllable ag, the second forming part of the syllable gnīm.

~~Thinking that~~ In this restricted sense the division ag/gnīm prescribed by the Rg. Prāt. ^{may} ~~might~~ have been possible; but the Vāj. Prāt. does not accept even this division.

It states that if the doubled consonant in question is followed by a consonant (except a fricative), the division will not be ag/gnīm, but agg/nīm; in other words, the group "gg" in agnīm was pronounced merely long, and the hearer did not hear two "g's" each distinct from the other. But in a word like pārsáva, the syllabic division according to this Prātisākhya could be pārá/éva. And ~~thinking~~ this differentiation by the Vāj. Prāt. can be explained on

phonetic grounds. For 'distinctive' doubling (i.e. doubling in which the first consonant is heard distinct from the second) is less probable when another plosive or a nasal consonant follows, for it is not so easy to sustain the breath-force for the articulation of two distinct "g's" and a succeeding plosive. When, however, a vowel, a semi-vowel, or a fricative follows, the distinctive doubling is easier, as the breath-force for the off-glide of "g" does not meet much obstruction in this case. Thus in several Panjabi and Lahndi dialects, distinctive doubling is prominently heard when a vowel follows, e.g. in vaddā, gattā, but it is not heard when a consonant follows, e.g. in vadkā, gatkā. Nevertheless it would be rash to suppose that the syllable division ag/gnā was not possible in any Indian dialect.

Syllabication of "r" + Doubled Plosive.

The Atharv. Prāt. (I.58) notices a case of doubling which has persisted in the language of the Gupta inscriptions and in classical Sanskrit, viz. the doubling of a plosive after "r", of. the following examples from the Gupta inscriptions:-

mārggam, vārggam (Ins. No. XVII), dirgha, varaga.

ārta- (XVIII), āvarjjana- (XXIII).

In the opinion of this Prātisādhya the additional stop arising from doubling will belong to the preceding syllable; thus arkkākā will be divided as ark-kākā.

~~I think that~~ Four (possible) divisions of the word written arkkākā are conceivable:-

(1) ark/-/kaḥ. "k" exploding fully before the succeeding "k". Strictly speaking, this division would be the only valid one if really double consonants, as distinguished from merely long consonants, were meant. But as I have pointed out above, in a double consonant the first was incompletely articulated before the second. Hence, if the division ark/-/kaḥ was taken to be strictly in the sense that the first "k" fully exploded before the second "k", the division proposed was inconsistent and invalid.

(2) ark/kaḥ. This division implied, as already explained, that although the consonant pronounced was only a single long consonant, the hearer seemed to hear two "k's", owing to the discontinuity of intensity caused by the long silence intervening between the on-glide and off-glide of "k", the first belonging to the syllable ark, the second forming part of the syllable kaḥ.

~~In my opinion,~~ In this restricted sense the division ark/kaḥ prescribed by the Atharv. Prāt. was valid.

(3) arkk-aḥ. This division was conceivable when the first syllable had a strong stress-accent. But it was hardly consistent with the general tendency of the language, for the living dialects did not generally allow a syllable to end in a double consonant, especially when a vowel followed.

(4) ar-kaḥ. The so-called double "k" in this division might have been actually pronounced as single, though orthographically written double.

Now I am inclined to think that the occurrence of the syllabic division ar-ka in Indian pronunciation does not seem to have been very probable. For, in the first place, as I have shown in the ^{5th} Chapter (on Doubling), Sanskrit had a tendency to double the plosive after "r"; so Sanskrit pronounced arka as arkka, svarga as svargga, and hence the more probable division was ark/ka etc., as explained above. Secondly, Sanskrit had an aversion to closing a syllable with "r", for there does not exist a Sanskrit word ending in "r". Thirdly, corresponding to Sanskrit "r" + plosive there exists only double plosive in Pāli and Prākṛit, cf. Sanskrit varga = Pāli and Prākṛit vagga, darpaṇa = dappana, durbala = dubbala. There is no doubt that this doubling in the living dialects may also be explained on the grounds of assimilation, so that var-ga ^{may} have become vag-ga by the direct change of "r" to "g". But on account of the above two reasons, viz. the tendency to double the plosive and aversion to closing a syllable with "r", ~~I think that~~ varg/ga was the more probable division, though, of course, var/ga was not an impossible division.

At any rate, the Atharv. Prāt's above observation that in the case of the doubling of the plosive after "r", the first 'plosive' belongs to the preceding syllable, - will be beyond dispute, if by 'plosive' the author meant the 'stop' stage of that consonant.

According to the ~~Prāt.~~ ¹⁻¹⁵, however, both the members of a doubled consonant after "r" or a fricative can optionally belong to the preceding or the succeeding syllable, so that the syllabic division of arttnī will be optionally artt/nī or ar/ttnī, of pārsanya - optionally pārs/nya - or pār/sanya.

~~I think~~ It will be apparent from the above discussion that the optional division ar/ttnī, pār/sanya - was not probable in Indian dialects, firstly, because Sanskrit had an aversion to closing a syllable with "r", and secondly, because a syllable beginning with a double consonant as ttnī, sanya was hardly likely to have occurred in Indian dialects.

Syllabication of plosive + fricative.

According to the Taitt. Prāt.¹, the plosive in the group plosive + fricative belongs to the succeeding syllable, but in a group plosive + fricative + consonant, the plosive belongs to the preceding syllable. Thus in the combination tatsavituh, the division of tatsa will be ta/ta, of jugupsā = ju/gu/psā.

It seems that in the pronunciation of academic Sanskrit, the plosive, in combinations like yāvat hi (= yāvadd hi), utsavaḥ, was not held so apart from the succeeding fricative as to give rise to the division yā/vat/hi, ut/sa/vaḥ. This is indicated by the doubling tendency and by the internal evidence of Sanskrit Sandhi. Thus Sanskrit labh + aye became lap/ (p) aye, indicating that the bh in this group was carried over to the succeeding "s", the assimilating force of which devocalized the bh. Similarly when yāvat hi became yāvaddhi, the plosive "t" was probably carried over to the succeeding syllable. *There is* I have noticed, however, a flaw in the prescribed syllabication. The author has not pointed out that the plosive was not simply carried over to the succeeding syllable; but it was also doubled at the same time. Thus in academic Sanskrit forms yāvaddhi, tacchatruh for yāvat hi, tat + sātruh respectively, and in Prākṛit forms macchara, jugucchā for Sanskrit matsara, jugupsā, the plosive was not simply carried over to the succeeding syllable, it was also doubled at the same time; so that in actual pronunciation the syllabic division_x seems to have been jugup/psā rather than ju/gu/psā. The general tendency of keeping the preceding

1. Taitt. Prāt. XXI.9 aparsasopaspara usmā cetparasya.

syllable close before a consonant-group was also maintained in this division.

Moreover, there are indications of a divergent tendency in several Sanskrit forms, showing that the Prātisākhya's rule regarding the syllabication of the group plosive + fricative was not universally applicable. Thus the Grammarians¹ state that in a group final cerebral + s, an intermediate consonant, viz. dental "t", occasionally intervenes, Pāṇini stating it to be optional. For instance, sat + santah became optionally sat̥tsantah; *sat + sahasrāḥ 7 sat̥sahasrāḥ; madhuliṭ + sāye 7 madhuliṭsāye. It seems that in these sporadic cases, the final cerebral was not carried to the succeeding syllable. A similar treatment of velarplosive + h ^{may} ~~might~~ be observed. For the grammarians² state that the h in this combination became optionally an aspiration of the preceding consonant; e.g. arvāk hyenan either became arvāgghyenan or remained unchanged. In the majority of cases a plosive + h in academic Sanskrit gives a double consonant aspirated, so that tat + harīḥ 7 taddharīḥ, vāk + harīḥ 7 vāggharīḥ, yet the occasional option in the case of velar + h indicates that the plosive was not necessarily carried over to the succeeding syllable.

1. Atharv. Prāt. II.8 ṭakārāt sakāre takāreṇa. Pāṇ. VIII.3.29

ḍaḥsidhūṭ.

2. Taitt. Prāt. V.38 prathanapūrvō hakāraścaturthaṃ tañya
sasthānam plākṣi-kaundinyagautampaṇṣkaraśādīnām.

With the above reservations, the Prātisākhya's observation, that the plosive was carried to the succeeding syllable to which the fricative belonged, was probably sound. And the probable validity of this observation is indicated by the living dialects. Thus in Prākṛit, Sanskrit ts and ps are represented ^{as ch} by passing through the stage tsh; e.g.

Sanskrit yatsa = Prākṛit vaccha; matsara = machhara; jugupsā = jugucchā, while Sanskrit ka- has become Prākṛit kh ^{or ch} e.g. kṣamā = khamā ^{chamā}. This effect of the succeeding fricative has been so strong that in compound words the final "t" of a prefix has actually become a fricative before another fricative in Prākṛit. Thus in Ardhamāgadhī Sanskrit utsarga-has become ussagga; Sanskrit utsedha-has become ussedha;

This close affinity of the plosive for the succeeding fricative, and the consequent assimilation were closely observed by Indian Grammarians. Thus according to the Yājñavalkya Śikṣā a non-aspirated k at the end of a ^{pada} word when followed by g was to be pronounced like kh, e.g. bhīṣak - sīsena was to be pronounced bhīṣakh - sīsena; a non-aspirated p at the end of a word when followed by g was to be pronounced like ph, e.g. apṣvagne was to be pronounced aphṣvagne, and similarly for other non-aspirated plosives.

1. 3'3 p.20 kakārānte pade pūrve sakāre parataḥ sthite khasavarṇaṃ vi jānīyād bhīṣakksīsena darśanam, pakarānte pade pūrve sakāre parataḥ sthite, phasavarṇaṃ vi jānīyād apṣvagneti nidarśanam.

Also Svarabhakti lakṣaṇa-parīśiṣṭa Śikṣā 10-11

The Nārada Śikṣā¹ similarly prescribes that these non-aspirated plosives should be pronounced like aspirated consonants, but adds that they do not deserve the designation of aspirated consonants. It seems that this Śikṣā had observed the transitional stage through which the plosives in question passed before they eventually became aspirated consonants proper in Pāli and Prakṛit. This phenomenon, however, has been mentioned even in the Ṛgveda Brāt. (XIII.16) where it is laid down that according to some authorities a non-aspirated plosive when followed by a fricative should be pronounced as an aspirated consonant.

This tendency of bringing together the plosive and the fricative in syllabication is further indicated by the interesting prohibition in Chapter XIV of the Ṛg Brāt.² which points out defects of pronunciation. According to this prohibition, as Uvaṭa illustrates it, abhutstrahi, utstnāya and viśvapatsnyasya should not be respectively pronounced abhutstrahi, utstnāya and viśvapatsnyasya. The insertion of an additional intrusive sound "t" in these examples was condemned as a defect in pronunciation, and yet this intrusive sound "t" was a natural reconciliation between two conflicting tendencies in the Sanskrit speaker. On the one hand, there was the inclination to carry "t" over to "s".

² XIV.5 adeśe vā vacanaṃ vyañjanasya

¹ Ś'S p. 437 prathamān ūṣmagānyuktān dvitīyāniva darśayet,
na caivān pratijāniyad yathā matayāḥ kuro' pśarūḥ,

and consequently, to divide abhutamhi as a/bhuta/mhi.

On the other hand, as ^{will be} ~~I have already~~ pointed out in the ^{5th} Chapter ^{see p. 191²} on Doubling, Sanskrit had an aversion to closing a syllable with "s", so that, instead of a/bhuta/mhi, the actual division became a/bhutst/mhi, by closing the syllable with "t". These ^{then} examples seem to indicate that in actual pronunciation the plosive and the fricative were not held so much apart from each other as to give rise to the syllabic division abhut/smhi. For, if the syllabic division in actual pronunciation had been abhut/smhi, the additional intrusive sound "t" after the fricative would have been unnecessary. ^{It is improbable} ~~I do not think~~ that this glide sound "t" belonged to the second syllable, for the syllable tsmhi was not likely to have occurred in Sanskrit, there being no example of a word in Sanskrit beginning with a group of three consonants consisting of plosive + fricative + sonant. So much, then, about the division of the group plosive + fricative, in which the plosive was to be carried over to the succeeding syllable.

But as regards the group plosive + fricative + consonant, the same ¹ Pratisākhya lays down that the plosive will go with the preceding syllable. Thus in the combination jagat/athan, the "t" of the group tath will go with the preceding syllable, so that the syllabic division will stand as jagat/athan. It will appear from the reasons that I have given above, that jagat/athan as prescribed by the author, was the most probable division of the group, for it is hardly likely that the other two possible divisions, viz., jagats/athan and jaga/tathan occurred. For, as regards the former, the Sanskrit speaker had an aversion to closing a syllable with "s", while as regards the latter it is

a well-known fact that Sanskrit did not have the general tendency to allow "s" to stand between two plosives, cf. the Aorist 3rd. person ^{singular} ~~plural~~ forms arut^a + ^x arudhat), aksipt_a (^x aksipsta), though the examples like abhatstamahi indicate that in actual pronunciation in some dialects tat could close a syllable.

To avoid the contingency of this unwieldy group of consonants, some of the living dialects in such groups of 3 consonants, in the middle of which there is a fricative, have added a Svarabhakti vowel, so that the corresponding group in Pali and Prakrit has only two instead of three consonants, the fricative amalgamating with the plosive and making it an aspirated consonant, cf. Sanskrit tikṣṇa - Pali tikkhina; pakṣman - Pali pakkhama; śukṣman - Pali stikkum^h.
Fricative + plosive.

Indian Grammarians have not handled the division of the group fricative + plosive, and it may be of interest to consider what was the most probable division of this group in the actual pronunciation of Sanskrit. The Sanskrit speaker in this case had to decide between two conflicting tendencies. On the one hand, he had the tendency to carry to the preceding syllable the first member of consonant-groups; on the other hand, he had an aversion to closing a syllable with a fricative consonant, for Sanskrit did not generally allow a word to end in a fricative consonant¹. The doubling of the plosive after

1. Except a Visarga, which had a very small consonantal element.

the fricative reconciled these conflicting tendencies, so that presumably the pronunciation of hasta-was hasita- and the syllables were divided thus, has/ta-. Similarly pusta- and avaskanda-were probably divided as pust/ta- and avask/kanda- respectively. This is indicated by the corresponding Prākṛit words, in which the plosive in question, under the influence of the preceding fricative in the same syllable, has become an aspirated consonant, e.g. hattha:- puttha:- avakkhanda:-

Moreover, by the doubling of the plosive in the Prākṛit forms, (though phonetically also present in the corresponding Sanskrit forms,) the predominant tendency to close the first syllable was also satisfied. There are several Prākṛit forms, however, in which the plosive in question has not been aspirated, but has been only doubled e.g. dupparisa:- sakkada:- tirakkarinī:- bhappadi (side by side with bhappadi) for Sanskrit words duḥśarṇa:- saṃskṛta:- tiraṣkarinī:- brhaspati:-. These examples do not positively indicate to which syllable the "s" belonged, but even they seem to indicate that the first syllable did not close with "s", for they show no trace of it.

That the semi-vowel in such cases could behave like a vowel is corroborated by the well-known rule of the 18th Prāt. (XVII. 14) that when it is necessary to make up the requisite number of syllables in a metre, the semi-vowel in a group consonant + semi-vowel may be taken as a vowel or syllable, as and as.

Syllabification of consonant + semi-vowel and of semi-vowel + semi-vowel

1
According to the Taitt. Prāt., in a group consonant + semi-vowel, the consonant went with the succeeding syllable, but in a group semi-vowel + semi-vowel, the first semi-vowel followed the preceding syllable.

As regards the group consonant + semi-vowel, the examples cited are adhyavasāya, iśētvā. The dh in adhya and the "t" in tvā were carried over to the succeeding syllable. Thus the syllabic division of adhya, in the opinion of the author, was a/dhya. The phonetic explanation given by the commentary Trbhāṣyaratna is that as a consonant is unable to stand by itself, it must go with the succeeding vocalic syllable. The explanation, however, seems to be inadequate, for there is no reason why the consonant, unable to stand by itself should not go with the preceding syllables in the examples before us, for the preceding syllables here are also vowels. According to the commentary the semi-vowel in the group consonant + semi-vowel behaves like a vowel, and the consonant, like all inter-vocalic consonants according to the rule of the Prātisākhyas, was consequently carried over to the succeeding syllable. That the semi-vowel in such cases could behave like a vowel is corroborated by the well-known rule of the 5g Prāt. (XVII. 14) that when it is necessary to make up the requisite number of syllables in a metre, the semi-vowel in a group consonant + semi-vowel may be taken as a vowel or syllabic iy and ny.

But as I have already pointed out in the above pages, the rule which requires all intervocalic consonants to be carried over to the succeeding vowel is purely conventional and arbitrary, and if it is maintained to be universal even within a single dialect it would be phonetically unsound. There seems to be no reason, then, why, on the grounds advanced by the commentator, the syllabic division should not be adh/ya.

iset/yā. What more probably happened in the syllabication of consonant semi-vowel was the doubling of the consonant and the carrying over of the second consonant to the succeeding syllable. Thus it does not seem to be likely that adva was pronounced ad/ya, and in this negative sense the Taitt. Prāt's prescription that the consonant did not belong to the preceding syllable, but was carried over to the succeeding syllable, was probably sound. But if the author implied thereby that the syllabic division of adva was a/dya, his opinion was disputable, as the testimony of manuscripts and the living dialects indicates that the consonant in forms like adva, padva, uivala, pakva was doubled. The second consonant was then carried over to the succeeding syllable, and, in the living dialects, underwent assimilation to the semi-vowel. Thus the above forms were more probably divided as ad/dya, pad/dya, ui/ivala, pak/kva.

That the consonants were actually doubled in these cases has been already shown in the above pages, but at the same time the syllabic division, in spite of the doubling, was not add/ya, padd/ya, uil/vala, and in this negative sense I agree with the author of the Taitt. Prāt. For the living dialects indicate that in syllabic division the consonant was

not kept distinctly apart from the succeeding semi-vowel, as in Pāli and Prākṛit the consonant has been assimilated to the semi-vowel, e.g. adva > ajja, etc.,

This doubling of the plosive, and as in Russian and occasionally in French, the palatalization of the dental with the disappearance of the semi-vowel as a separate sound seem to indicate that the consonant was not held apart from the succeeding semi-vowel in syllabic division, but underwent a phonetic change by assimilation to the semi-vowel, either by mere doubling of the plosive and disappearance of the semi-vowel, or palatalization, as shown above. So far, then, as the Taitt. Prāt. observed this inseparable affinity of the consonant for the succeeding semi-vowel, its observation was sound. The only omission in the author's prescribed syllabication was that of the doubling of the consonant.

When therefore Sanskrit adva became Prākṛit ajja, satya-7 saṁca, the syllabic division probably passed through the stages ad/ya = ad/ya = ajja: sat/tya = sat-c(ty)a = saṁca.

The syllabication of groups like ty in actual pronunciation was much more complicated than the division prescribed by the Taitt. Prāt. There is no doubt that the

1. Thus in Russian, "y" after palatalizing the preceding consonant e.g. ~~datya~~ has become dica, and similarly lapses into a mere glide and palatalizes the preceding consonant in some of the French dialects, cf. pane for panier, mu prāṇa for mu prāṇa. (Passy: Changements Phonétiques p.174).
 Cf. how English piktjʊd has become piktʃə. (Prof. Jones: English Phonetics, 2nd Edition p.103)

Syllabication of semi-vowel + semi-vowel.

As regards the group semi-vowel + semi-vowel, the Taitt. Prāt.¹ states that the first semi-vowel in this group will belong to the preceding syllable. Thus the "y" in navya^x will belong to the preceding syllable, similarly "y" in maricavya^x will belong to the preceding syllable. The first semi-vowel in this group, then, will behave like the first member of a consonant-group, and will thus follow the general rule of syllabication to which consonant-groups were subject, viz., the first member of the group will belong to the preceding syllable. The "y" in the group vy will then behave like the "i" in putra, or the "k" in mukta, the probable syllabication of which has been shown to be put/tra, muk/ta^x. We saw that the first member of these groups was actually doubled in pronunciation, and in pursuance of the same scheme of syllabication the syllabic division of navya^x, in accordance with the prescription of the Taitt. Prāt. was likely to have been nav/vya^x. The syllabication of groups like vy in actual pronunciation was much more complicated than the division prescribed by the Taitt. Prāt. There is no doubt that the living dialects, in a large number of cases, indicate doubling of the first member of vy, so that in Prākṛit and Pāli, Sanskrit vy - vy or bb, cf. nabba - Sanskrit navya, kāḍavya^x - kartavya^x, dāḍavyā = dātavyā, amucitthidavya^x - amusthātavya^x.

1. XXI.7 nāntasthāpāram asavarṇam.

2. See Sloka in Gāli ZDMG Vol. 44, p. 95.

This doubling of the first member of vy is also commonly met with in several Vedic Mss. cf. daivvā, madhavvyaṃ, prthivvyaṃ (India Office 2391), bhrātvvyaṃ, prthivvyaṃ (British Museum 5350). These examples, then, seem to confirm the syllabication prescribed by the Taitt. Prāt., as the doubling of the first member indicates that the general tendency of keeping the first syllable close was maintained in this case.

There are to be found
~~I have some~~ ^{will be} ~~across~~ divergent cases, however, which seem to indicate that the syllabic division nav/yvā^x which the Taitt. Prāt. seems to prescribe did not universally occur in Indian dialects. For in the Rgveda navyā^x sometimes appears as naviyā^x, as in Rgveda I-105-15 (cf. Arnold's Vedic metre p.293) VIII.11.10, while in Aśokan inscriptions also vy has sometimes become vi, cf. chaṇṇitaviya-, viḥavantiya- (Woolⁿ~~x~~er's Glossary p. XXXVI). These examples indicate that the tendency to close the preceding syllable with "y", whenever the group vy occurred, was not universal. For side by side with the division nav/yvā^x, there also possibly existed na/yi/vā^x^{x'}.

Moreover, that this tendency to close the syllable with "y" was not universal is indicated by the treatment of vy in Pāli metre,^{as} the group vy in Sanskrit and Pāli metre often does not make position,² ~~as I have shown in the Chapter on Syllabic quantity.~~

X¹. This iyā in some forms ~~may~~ have been due to the analogy of words containing the ^{after an originally long syllable,} suffix iyā representing Indo-European yo- cf. i.e. lviriyo.^{ble}
yo- cf. i.e. lviriyo.

² Der S'loka im Pāli, ZDMG Vol. 44, p. 95.

I have taken the above prescription of the Taitt. Prāt. to imply that the first syllable in navyā^{x̄} was kept close by the doubling of "y", as in nav/vyā^{x̄}, put/tra^{x̄}. If, however, the author meant to imply that "v", without being doubled, was to be carried to the first syllable, the division being nav/yā^{x̄}, then "v" being at the end of a syllable, became very nearly a vowel, as ^{will be} I have shown in ^{the 6th} another chapter. In that case the pronunciation would have resulted in nau-yās, as in the case of Lithuanian naūyas from Indo-European noy̯os. But the fact that no such form has been found in India is an additional argument against the division nav/yā^{x̄}.

of the plosive, but a developed "p" appearing at the explosive stage of "p", and what really happened in giving was the appearance of an "p" at the explosive stage of "p", so that an intrusive sound was inserted, viz., the nasal consonant corresponding to the plosive at its explosive stage. The Yams, then, were nasal sounds intervening between the plosive and the nasal consonant, and the question arose whether they belonged to the preceding or the succeeding syllable.

According to the Taitt. Prāt. the Yams belonged to the succeeding syllable, so that the syllabic division of the above words in accordance with the opinion of this authority was nav/yā^{x̄}; put/tra^{x̄}. According to the Vaj. Prāt., however, they belonged to the preceding syllable. Both views were

Syllabication of the Yamas.

There was an interesting divergence of views among Indian grammarians regarding the syllabication of the Yamas. The Yamas were said to be particular nasal sounds occurring in the group plosive + nasal consonant, being due to partial nasal plosion of the plosive. Yama literally means "twin", as there were said to be two stages in the articulation of the plosive, as in rukma, padma, avapna. The first stage was the implosive stage of the plosive. In the second stage air began to pass through the nasal cavity while the contact for the articulation of the following nasal consonant was being formed. The passage of air through the nasal cavity was said to nasalize the plosive. But what really happened in rukma was not the nasalization of the plosive, but a devoiced "n" appearing at the explosive stage of "k", and what really happened in padma was the appearance of a "n" at the explosive stage of "d", so that an intrusive sound was inserted, viz., the nasal consonant corresponding to the plosive at its explosive stage. The Yamas, then, were nasal sounds intervening between the plosive and the nasal consonant, and the question arose whether they belonged to the preceding or the succeeding syllable.

According to the Taitt. Prāt. the Yamas belonged to the succeeding syllable, so that the syllabic division of the above words in accordance with the opinion of this authority was pad/ma, ruk/ma, avap/na. According to the Vāj. Prāt., however, they belonged to the preceding syllable. Both views were

For several other consonant groups of Vischak, p. 191.

phonetically possible, for, by the force of regressive assimilation which was so prominent in Sanskrit, the opening of the nasal cavity for the articulation of the succeeding nasal consonant ^{may} ~~must~~ have taken place not only while the preceding plosive was being exploded, but, in some dialects, even before its articulation had started. That there are indications of both these tendencies in those times and that these observations actually refer to particular dialects is indicated by parallel phenomena in Pāli and Prākṛit. Thus while in Ardhamāgadhī (Pischel pp. 190-191) we have ruppini for Sanskrit rakmini, in ~~some dialects of Pāli and Prākṛit~~ we have rummavati for rukma-
yati. In the former case, nasality has been entirely driven out of the consonant-group, so that there could be no question of the nasal sound yama as belonging to the preceding syllable. In the latter case, however, the nasal consonant has entirely driven out the plosive, representing cases in which the opening of the nasal cavity, by the force of assimilation of the succeeding nasal consonant, had the tendency to start earlier, and so in this case the yama may be said to have belonged to the preceding syllable. Similarly additional examples from Pāli Dialects, as pañña-for prajña, rañña-for rājña, āṇa for ājña (Geiger p. 64) indicate how nasality had attacked the preceding plosive. And yet some of the Pāli dialects also indicate opposite tendencies, thus while we have pañña-for prajña, we have at the same time soppa-for svapnah, aggi-for agni, attaia-for ātmaia¹

¹ For several other consonant-groups, cf. Pischel, p. 191.

As regards the group fricative + nasal consonant, there was some divergence of opinion. While the Atharv. Prāt. (I.100) permits a partial nasalization of "h" in jihva; brahmaⁿ etc., the Śikṣās expressly prohibit the nasalization of fricatives. Thus the Cārāyaṇīya Śikṣā¹ lays down that in the group h + m air should not be exploded through the nostrils, while the Yājñavalkya Śikṣā² prohibits the nasalization of hissing fricatives, and states that when nasal consonants follow fricatives or semi-vowels, the Yamas leave them, just as the relations of a dead man retire after leaving his corpse in the burial ground, or just as an elephant retreats at the sight of a lion. This prohibition, ~~I think~~, was evidently based on observation of contemporary phenomena among the dialects. First, as regards Yamas in general. That there was actually a strong tendency for the insertion of Yamas among certain Sanskrit-speaking areas even in ancient times, has been pointed out by the Ṛg Prāt.³ in the chapter on mistakes in Sanskrit pronunciation. This authority states that some people erroneously pronounce two Yamas in the group labial plosive + nasal consonant, thus trpṇuta was said to be pronounced as trpṇṇuta, āpnānam as āpṇṇānam, aubhṇāt as aubṇṇāt. What the author had really observed in the so-called 'two' Yamas was probably a particularly strong nasality during the release of the plosive. Secondly,

1. na vāyur hamasanyoge nāsikābhyām samuterjjet. Fol. 4.
2. S' S p.33 pañcamāḥ sapasair yuktā antasthair vāpi samyutāḥ, yamās tatra nivartante smasānādīva bāndhavaḥ (or another reading) siṃham dṛṣṭvā yathā gaḇaḥ.
3. XIV.22 pakāravargopahitācca raktānyam yamam.

as regards the articulation of the prohibited Yama in the group fricative + nasal consonant, the same authority states that some people erroneously pronounce a Yama after a fricative when a nasal consonant follows, e.g. in prissniX, visṇuX, sṇātyā. And a reference to Pāli will prove how nasalization had affected even fricatives. Thus Pāli has unha-for usna, omhanā for asmanā, paṇhā for praśna, pahāyati for anāyati. These examples indicate which way the tide was turning and the circumstances which led the Vāj, Prāt. to bow to the facts and to lay down that the Yama belonged to the preceding syllable, although it had led the Śikṣas to prohibit the nasalization of fricatives which they presumably condemned as provincialism. And yet, it seems to me that this prohibition was phonetically harder in the case of fricatives than it would have been in the case of plosives, for once the tendency to nasalize consonants has started, it is easier to open the nasal cavity in the articulation of fricatives - which require less closure of articulating organs - than of plosives. Thus the greater convenience of opening the nasal cavity during the articulation of fricatives can be best illustrated by the change which Sanskrit nasal consonants have undergone before the hissing fricatives, cf. upayan+syate = upayanasyate, manayate = manasyate; the nasal consonants here have become Anusvāra, and have wholly or partially lost their occlusion, the nasal cavity being more open in the case of the Anusvāra. A similar change has occurred in Lithuanian cf. kāndu (I bite), fut. kāsiu, infin. kāsti; minti (to step), fut. siūsiu, siūnė (I send), fut. siūsiu, inf. siūsti. The nasal consonant in these examples has been changed into a nasalized vowel.

1. XIV.10 param yamaṁ raktaparād aghoṣād Gaṇānam vāghoṣiṇas*
tatprayatnam.

Syllabication of the Anusvāra

The Anusvāra according to the Ṛgveda Prāt. belongs to the preceding syllable. Thus the Anusvāra in anśunā will belong to the preceding vowel "a", and the syllabic division will thus be an-śu-nā.

The syllabic position of the Anusvāra seems prima facie to be quite simple, for if anusvāra was a nasalization of the vowel, it must form part of the syllable containing that vowel. But the case is not so simple as it appears to be. For grammatical authorities in India were far from unanimous regarding the nature of the Anusvāra. If anusvāra was a pure nasalized vowel, as in French bon (bō), pain (pē), dans (dā) etc., then even the question of its syllabic position could not arise, for in that case it formed an independent syllable, complete by itself, strictly according to the definition of the syllable (aksara) as given by the Pārisīkṣāṭīkā viz. that which does not move, i.e. which stands alone. But if the Anusvāra was not a pure nasalized vowel, but contained, in a more or less degree, a consonantal element, then it was quite open to the question whether it belonged to the preceding or the succeeding syllable. The consonantal element, if intervocalic, could be divided between the two vowels, or, if pronounced with sufficient prominence, and if followed by a syllable with a strong stress-accent, could go with the succeeding syllable, as in Prākṛit tām anu, mām attha, or, if followed by a consonant and pronounced with sufficient prominence, could form even an independent syllable, like the anusvāra in yāsāṃsi in the Kāthaka school, which, according to the statement of the

Āraṇya Śikṣā, was an independent syllable¹. Again, if Anusvāra had a weak consonantal element, but was followed by a consonant, and nasalized the preceding vowel at the same time, it could serve as a glide sound between the preceding vowel and the succeeding consonant, its on-glide in that case would pertain to the preceding syllable, and its off-glide to the succeeding syllable, as in the Pānjabi words vāṇā, bhāṇā.

1. vāsaśabdād anusvāraḥ kāṭhake nīca iṣyate 52.

com:- vāsaḥ śabdāt pratiyamāno' nusvāraḥ kāṭhake prthageva na pūrvāṇsam ityarthah. Similarly Sarvasamāta Śikṣā vivarṇa II-38

(MS Madras No. 998) kāṭhakākhye carāṇe vāsaś-śabdāduttaro' nusvāraḥ pūrvasyāṅgaḥ na bhavati. If the Anusvāra in vāsaḥ

was an independent syllable, it ~~might~~^{may} have been pronounced with considerable prominence, but it seems to be incredible that only a single word in a whole school was observed to possess the anusvāra as an independent syllable. Either it was a loan-word from other dialects, or was a typical example representing several words of similar nature pronounced in the same school.

For although even here the first syllable was more likely to have been na or ṇa, as the "n" was not likely to belong to the succeeding syllable, for there exists no word in Sanskrit with an initial nasal + plosive, yet the "n",

if pronounced with sufficient prominence, could have formed an independent syllable, as it was said to be in vāsā¹msi, or it could possibly have been divided between the preceding vowel and the succeeding consonant. We have, of course, no means at present to measure the prominence of this consonantal element as it was pronounced in ancient times, and so are not in a position to specify in what particular words the consonantal element of the Anusvāra could be an independent syllable. At any rate, the mere orthographic position of the Anusvāra could not serve as an absolute guide as to whether it belonged entirely to the preceding or the succeeding syllable, or formed an independent syllable.

It will be (3) ~~I have~~ shown in the ^{9th} chapter (on the Anusvāra) ^(cf. p. 252) that in most of the living dialects the Anusvāra has lost its consonantal element and has become a pure nasalized vowel, cf. Sanskrit vaṃśā, but Hindi baṃs etc.. In the case of most of the living dialects, then, the rule of the Prātisākhya that the Anusvāra belonged to the preceding vowel can be safely accepted, but it cannot be safely accepted without reservation so far as academic Sanskrit was concerned.

¹ As regards the syllabic quantity of the Anusvāra, cf. p. 164.

that Svarabhaṅgi after the circumflex accent will be an independent syllable. ^{svarita} My Svarabhaṅgi after a circumflex accent formed an independent syllable these authorities do not explain, but the point mentioned may have an important bearing on the origin of Svarabhaṅgi.

~~It is true, I think that the dissyllabic division of~~

Syllabication of Svarabhakti

The Svarabhakti, according to Rg Prāt. (I.17) will belong to the preceding syllable. For instance, Uvaṭa quotes Rgveda VI. 75.4, where we have a phrase ārttāī imé. Here the Svarabhakti vowel after "r" is heard with a high accent, as it will be a part of the preceding syllable which has high accent.

To the superficial observer it ~~might~~ ^{may} seem to be an incorrect and at the same time inconsistent observation, ~~for it might be supposed~~ ^{on the ground} that the addition of another vowel, namely the Svarabhakti, should give another syllable to the word, while it ~~might~~ ^{may} seem to be inconsistent with the Prātisākhya's principle that a vowel is the essence of a syllable. But in this age we are not in a position to measure the intensity of Svarabhakti as it was pronounced two thousand years ago. If the Svarabhakti was a mere glide sound, and if its intensity did not exceed the intensity of "r", it could have belonged to the same syllable.

But the ~~most important~~ ^{a striking} point, mentioned by some of the Śikṣas, regarding the syllabication of the Svarabhakti is that Svarabhakti after the ~~circumflex~~ ^{svarita} accent will be an independent syllable. Why Svarabhakti after a ~~circumflex~~ ^{svarita} accent formed an independent syllable these authorities do not explain, but the point mentioned may have an important bearing on the origin of Svarabhakti.

~~It is true, I think that the diasyllabic division of~~

'peak' was higher than even the Udātta, it might have raised, relatively speaking, the tone of the succeeding syllables in such a manner as sometimes to produce new syllables. I say 'relatively speaking', because the Svarita according to the Indian theory had a descending scale of intonation. The tone of the Svarabhakti vowel might, therefore, have been so relatively raised by the preceding circumflex accent as to give to it the value of an independent syllable.

I now proceed to describe in detail and to examine this rule regarding the independent syllabication of Svarabhakti.

In a general form this rule occurs in the Vaidikābharana on Taitt. Prāt. XXI.18, according to which Svarabhakti after ^{the svarita} a circumflex accent will form an independent syllable. Thus the Svarabhakti in yāddār sapūrṇamāsaū TS I.6.7, etān dāsārbhāṃśalabhanta (II.18.4) and dhītibhīrhitān TS IV.2.7. will form an independent syllable, as it is preceded by the ^{sva} circumflex accent; but not in annariva khālu vai varṣam TS V.4.9 etad yajñasya yādakhā śīrṣāṇeva V.1.7., yajñasaiva tad barsam mahavyati II.5.7 sa-śīrṣāṇevāgnim cinute TS V.5.4, in which Svarabhakti follows the low accent.

1. svārāt parā svarabhaktiḥ svapradhānā prakīrtitā, rtāsya dhūrṣādam ceti svatantrā bhaktirīṣyate.

is dhūrṣādam, where Svarabhakti will be an independent syllable. I have seen barsam only once in the Taitt.

Brāhmaṇa I.2.6.12, and some readings of this passage have actually changed the vowels to some extent on the original dhārṣaṇa.

As counter-example, the Yājñabalkya quotes Taitt. Brāhmaṇa I.1.6 "catvāra ārṣeṣa prāśnanti," where Svarabhakti is not an independent syllable, as it is preceded by the Udātta vowel "ā" ✕. This authority also lays down that a Svarabhakti which is at the end of a word does not form an independent syllable; thus in doṣāvastor/haviṣmatī, Svarabhakti will belong to the preceding syllable, where "r" is at the end of the word vastor. ~~I think~~ This suggestion is interesting, as it implies that in the case of some speakers, whenever there was an infinitesimal pause between the final Svarabhakti and a succeeding word, the Svarabhakti was not intense enough to constitute an independent syllable. For the difficulty of pronouncing the sonant "r" + fricative consonant, without an intervening vowel, was one of the factors that produced the Svarabhakti, and if there was an infinitesimal pause between "r" and the consonant, the difficulty of pronouncing "r" ^{may} ~~might~~ have been slightly reduced, and only a lax type of Svarabhakti ^{may} ~~might~~ have arisen -- a fact that illustrates the laxity of all finals in Sanskrit. But ~~I do not think~~ ^{presumably} fluent utterance would not have made any difference as to whether "r" was final or medial.

Another interesting example given by the Yājñabalkya is ^{rtāṣya} dhūrṣadam, where Svarabhakti will be an independent syllable. ~~I have come across~~ ^{phrase occurs} ~~this word~~ in the Taitt.

Brāhmaṇa I.2.1.12, and some readings of this passage have actually¹⁴⁴ vowels in the Vedas is more or less based on the original dhūrsādam.
~~circumflex accent of the syllables concerned¹. The~~
~~tendency of the circumflex giving an additional vowel "u".~~

The verse in which this word occurs is:-

ghṛtāpratīkam ca rtāsya dhūrsādam
agnīm mitrām nā samidhānā rñjate.

The metre in the verse is complete without requiring preceding syllable and therefore is not placed as an additional syllable from Svarabhakti, but as some readings of the same passage have also dhūrsādam,

the pāda ^{may} ~~might~~ have become hypersyllabic, which is not a rare occurrence in Vedic metre. The following examples are said to illustrate the independence of Svarabhakti after a short vowel with Svarita accent:-

pūnārhavirāsīd ityāha, yād-dārs-apūrnāmāsau².

cf. St. Peter. Lexicon.

1. ~~Wackernagel p.219~~

2. rtāsya dhūrseti rtāsvā dhūrsādam iti svatantrā
svarabhaktyudāharanam syāt:-

"dīrghāc ca hrāsvāt svaritāt anantyaṭ

prthag bhaved bhaktiḥsāṃhitā ca.

dīrghāt svaritāt parā anantyaḍ apadād asāṃhitā bhaktiḥ

svarabhaktiḥ prthag pratyekam syāt, yathā:- sāsīrsānāmeva,

vācchīrsānāḥ sīrsāsāktimān, kōrhati sahasram, yād bārnaspatyas-

tenārhati. svaritāt paretī kim:- catvāra ārseyāḥ prāśnanti.

anantyeti kim:- dōsāvastōrhavīsmatī hrāsvāt svaritāt parā

svarabhaktiḥ pratyekam syāt:- yathā pūnārhavirāsīdityāḥ,

yāddarsāpūrnāmāsau. ^{Pāri Śik. 129, 130.} Similarly Vyāsa Śikṣā:- dīrghāt

svārādanantyaḥ ca svarabhaktiḥ prthag bhavet. XXIII-6.

In order to test the validity of the observation that the Brāhmaṇa I. 2.1, and some readings of this passage have Svarita accent and the succeeding Svarabhakti vowel are actually dhūrusadam,

The commentary on the Āraṇya Śikṣā¹ (MS No. 867 Madras) gives further ^{details} specifications. It points out that after a short vowel with ^{svarita} circumflex accent Svarabhakti is not different from a vowel: it does not belong to the preceding syllable and therefore in some places becomes an independent syllable. Thus Svarabhakti will be an independent syllable in indriyārsibhyah, arunah kāndarsyah, etādvīdhāyārsiravocāt, agnir devatā brāhmetyārsam, sahāsra-sīrsam devam, yād rātryā ^(?) pāpamīkārsam. These examples quoted are apparently from prose passages and so it would be difficult to test the independence of Svarabhakti therein. The examples sīrsam and akārsam do not seem to be consistent, for the preceding vowels here are long and not short, yet these instances seem to indicate that the rule regarding the quantity of the vowel was not accepted as strictly binding.

According to the Pārisīkṣā Tīkā Yājñabalkya², however, (MS 924 Madras), Svarabhakti both after a short and a long vowel with Svarita accent gives an independent syllable, e.g. in sāsīrsānāmeva (T. Br. I.1.8) yāochīrsanā^{ah} sīrsasāktimān, kōrhati sahasram, yād bārhaspatvāh tēnārhati.

1. "hrasvasvārāt svarābhinnā ityādi lakṣanaprāptasvarabhaktinām pūrvāṅgatvam niśidhya kutracit prthaktvam vidhatte:-
"yāgakāṇḍavidhāyordhvam rsibhyo hyarsayo hyarṣih
ityāsrasīrsakapārvam rsamceti svatantrātā"^{118, 119.}

2 See footnote p. 144.

In order to test the validity of the observation that the Svarita accent made the succeeding Svarabhakti vowel an independent syllable, I examined 110 verses in the different Vedas. Of these verses, 62 had the Svarita immediately before Svarabhakti in the Samhitā text. Of these 62 verses, 45 gave a negative result, i.e. Svarabhakti, in these 45 verses, was not required to complete the requisite number of metrical syllables. But of the remaining 16 verses, 2 manifest the Svarabhakti to be an independent syllable, while in 15 verses Svarabhakti is probably an independent syllable. Besides these 62 verses in which the Svarita precedes the Svarabhakti, I examined 48 verses in which Udātta or Anudātta, and not the Svarita, occurs before the Svarabhakti, and all these verses gave a negative result, the metre remaining complete without requiring an additional syllable from Svarabhakti.

I now proceed to quote in detail some of the verses which have given the results mentioned above. The

Vaidikābharana (Taitt. Prāt. XXI.15) quotes the following verse from the Taittirīya Samhitā, ⁽¹⁰²⁻⁷⁾ which also occurs in the Vājasaneyi Samhitā (XII-108):-

ūrjō napājātavedaḥ susastibhir ^{na} madasā ^{va} dhītibhīḥ hitāḥ
tvé isah sāmdadhur bhūri ^{ret} varpasas citrôtāyo vāmā jātāḥ.

According to the Vaidikābharana the Svarabhakti after "r"

in dhītibhīḥ hitāḥ follows the Svarita accent and is an

independent syllable. ^{But} I am afraid, however, the verse

quoted by the author does not seem to be very satisfactory,

for the metre is complete without the need of an additional

syllable from Svarabhakti. The metre is Paṅkti, requiring 12 x 8 syllables, and this is exactly the number of syllables occurring in the line, there being no need of an additional syllable from Svarabhakti. The author, however, has been apparently guided by the traditional record of the metre of this verse in the Chhandōnukramanī, for according to this work the metre of this verse is Bhurik-Paṅkti, i.e. hypersyllabic Paṅkti, and this additional syllable ^{may} ~~must~~ be due to Svarabhakti, there being no other vowel or semi-vowel likely to give an extra syllable.

I will now quote some of the verses examined by me.

1. Svarabhakti as an independent syllable.

(1) avārsīr varsam udu sū grbhāyā
akardhānvānyetyetavā ū.
ajījana osadhīrphojanāya
kamuta prajābhyo vido manisaṃ.

Here the Svarabhakti after "r" which occurs in avārsīr and which is preceded by the Svarita accent gives an additional syllable. The metre is said to be Paṅkti and the pada should require 12 syllables; but for the syllable from Svarabhakti the metre would be incomplete, as the pāda would contain only 11 syllables. This verse has been noticed neither by Prof. Arnold nor by Oldenberg.

There is no doubt that the opening avārsīr with three short syllables is rather unusual in a trimeter Vedic verse, but that such opening is not impossible may be

The metre of the above two verses mentioned by our commentators does not therefore prove that Svarabhakti after Svarita, as pronounced by the Vedic poets themselves, gave an independent syllable. It seems to be possible, however, that the commentators' pronunciation of Svarabhakti had itself undergone the change referred to. The probability of the occurrence is somewhat further increased by the later development of the language, in which Svarabhakti has actually emerged as a full vowel and the Svarita, may have been a more favourable condition for this phenomenon. For, as will be shown in the chapter on Accent,¹ the tendency

of the Svarita, according to some of the Indian Grammarians, was to raise, in certain cases, the prominence of the succeeding sounds. For instance, after a Svarita the quantity of certain consonants was said to be increased, and even the low tone after it became slightly higher. The increased pitch of the Anudatta after Svarita is indicated, to some extent, by the peculiar

com. nicādisvarāṇ kramād angusthāgreṇa nirdiśet

1. See page 264, madhyarekhyāṇa pracāyaṇa.

marking (like Udātta) in the Samhitā text. But that it was not mere orthographic marking is further indicated by the fact that the Anudātta after Svarita was given a special designation, viz. pracaya, the Nārada Śikṣā¹ enumerating it among the five kinds of accents, while the later Śikṣās term it dhṛta² "kept up" - a term significantly indicating that the descending high-tone was maintained in some of the succeeding syllables. Moreover, these Śikṣās give special directions on the movement of the hand in the articulation of the dhṛta accent. Thus according to the Vyāsa Śikṣā,³ in the pronunciation of the dhṛta accent the tip of the thumb was to be directed towards the middle line of the middle finger.

-
1. ŚS p. 422 Udāttas' cānudāttas' ca svarita-pracite tathā nighātas' ceti vijñeyah svarabhedas tu pañcadhā .
 2. Cf. the Vaidikābharṇa on Taitt. Prāt. XVIII.3, which speaks of "dhṛta" as a synonym for pracaya.
 3. XVIII-1.

kanīṣṭhānāmikā - madhyā - tarjanīśūttame kare, nīca-
svāradhṛtodāttān anguṣṭhāgreṇa nirdiśet.

com. nīcādisvarān kramād anguṣṭhāgreṇa nirdiśet
madhyamāṅgulyā madhyarekhāyaṃ pracayam.

However conventional these directions may have been, they show that the pracaya accent was a reality and not a mere convention.

Though the scansion of Vedic metre, then, does not seem to confirm the views of the Siksās on this point, yet the above facts indicate that their observations were not fanciful, but had some basis presumably in the pronunciation of their own day.

This division by length implied that the quantity of \bar{y} was long enough to require a break in the middle of it. A separate treatment of syllabic quantity was therefore unnecessary, and practicable only for conventional convenience. However, deviations from the general rule of syllabic quantity have been often met with in Sanskrit and Prākṛit poetry. There is no doubt that the deviations had also a phonetic basis, and could not be exclusively attributed to metrical license; but as the psychological element also plays a conspicuous part in rhythm, the treatment of these deviations belonged more to metrics than to phonetics.

The general principle of syllabic quantity presumably depended upon duration, which was said to be the basis of quantity, see page 279. This is indicated by the [?] Siksā's observation that "a long vowel is a long syllable, but the syllable becomes longer if it is followed by a consonant."

According to this authority, then, it was not the vowel

CHAPTER III*.

Syllabic Quantity.

The treatment of syllabic quantity in Indian grammatical works is meagre, but it was probably justified. For syllabic quantity can not be really considered apart from syllabic division, quantity being itself an element of that division. If, in actual speech, the grammarians had observed the division of the word commonly written putrah as put/trah, that division by itself implied that the quantity of t was long enough to require a break in the middle of it. A separate treatment of syllabic quantity was therefore unnecessary, and permissible only for conventional convenience. Moreover, deviations from the general rules of syllabic quantity have been often met with in Sanskrit and Prākṛit prosody. There is no doubt that the deviations had also a phonetic basis, and could not be exclusively attributed to metrical license; but as the psychological element also plays a conspicuous part in Rhythm, the treatment of these deviations belonged more to Metrics than to Phonetics.

The general principle of syllabic quantity presumably depended upon duration, which was said to be the basis of Quantity, see page 279. This is indicated by the Rg Prāt's observation that "a long vowel is a long syllable, but the syllable becomes longer if it is followed by a consonant."¹

According to this authority, then, it was not the vowel that constituted the lengthened syllable, but the group vowel + consonant. And this was a sound observation, free from the error of the Greek Grammarians who supposed that a short vowel by nature became long by position before a consonant-group.²

1. Rg Prāt. XVIII.30.

guru dīrghap garīyas tu yadi savyañjanap bhavet.

2. Boudet: *Éléments de Phonétique générale*, p.235.

They ignored the fact that it was the syllable, not the vowel, that was lengthened. Of course if the Rg Prāt. implied that a long vowel + consonant was necessarily longer than the long vowel without consonant, the opinion cannot be accepted in all cases, for the succeeding consonant in some cases may slightly shorten the long vowel. Nevertheless, the spirit of the observation, that the syllable, and not the vowel, became longer, was apparently valid. The consonant made it a longer syllable, because, according to their theory, the syllable then required longer duration.

As regards the general duration of a syllable, the short syllable was said to have one mora, and the long syllable, two moras.¹ This was, strictly speaking, an inaccurate measurement in several cases, for according to this standard the syllable apṛ in apṛā, which was counted as short, had only a single mora, and was thus inconsistent with even the Indian theory of quantity, according to which the group apṛ ought to have $\frac{1}{2}$ (for a) + $\frac{1}{2}$ (for p) + 1 (for r) = 3 moras. And the conventional nature of this standard was admitted by the author of the *Vṛttamuktāvalī-taralā*, a manuscript work in the India Office.² He says, "By a conventional tradition the quantity of a long syllable is measured as two moras, which are attributed even to the pluta vowel (that has three moras). In the same way, although the quantity of a consonant is $\frac{1}{2}$ mora, a syllable ending in a consonant is measured two moras. That a consonant should not increase the quantity of the syllable is due

1. *Piṅgala: Chhandah Śāstra* 6-19 sa gaṅāro dvimātro
dvau laghūkṛtvā gapauḥsyat.

2. No. 1713b.

to convention."¹ The author here evidently points out the limitations of this standard of quantitative measurement, but the difficulty mentioned by him does not affect the general theory of syllabic quantity advanced by the Rg Prāt. as mentioned above, viz. that a consonant did increase the length of the syllable. A uniform standard of 1:2 served only as a rough working bases for syllabic measurement, when more delicate instruments were not available, and with this rough standard, the ½ mora of a consonant was, in practice, either neglected, as in sprhā, or, when necessary, measured as a full mora, as in at. Moreover, it is probable that the rule referred to the actual duration of audition, which often does not exactly correspond to Kymographic tracings, cf. page 155. Again, that this conventional standard was not carried too far is indicated by another work, the Sarasvatīkaṇṭhābharaṇa. It points out an exception to the rule that a short vowel + consonant-group makes a long syllable. It states that in quick utterance a consonant-group may not make position, and in that case "there is no breach of metrical rhythm."² Thus it illustrates the following Prākṛit verse:-

-
1. Folio 1: gurur dvimātra eva gāṇiṇya iti sampradāyāt
pluto'pi gurur dvimātra eva gāṇyate evaṃ vyañja-
naṃ tv ardhamātrakam ityuktisatve'pi vyañjanāntadīr-
ghas' ohe tasmād ityāḍau na gaṇabhaṅgaḥ, vyañjanāntasyā-
pi guror dvimātratvenaiṇa gāṇanāt vyañjanena ca
varpādhiḥkyaṇ na bhavatiṭi sampradāyāt.
 2. yadā tīvraprayatnena saṃyogāder agauravam, na ohhando-
bhaṅgaṇ ityāhuḥ tadā doṣāya sūrayaḥ. Kāvyaṇālā ed. p. 103.

jaha hñāum oippe abhantam ulhāsiām amu-aidhantam
taha a nhāsi tunap saccō golānaitūhe.¹

Here the consonant-groups nh and lh did not make position, and there was said to be no breach of metrical rules if the consonants were quickly pronounced. Metre Āryā.

The ultimate basis of syllabic quantity, then, was recognised to be phonetic duration, even by the rigid authorities on classical metre.

Chapter IV

Rules of Syllabic quantity.

On the basis of the general principle of syllabic quantity examined above, Indian Grammarians and Metrists have given the following detailed rules of syllabic quantity:-

- Rule I. (a) A short vowel is a short syllable, but a short vowel with a consonant is a longer syllable, though it still deserves the designation of a short syllable. According to this rule, then, both a and da were short syllables, though da was a little longer.
- (b) A long vowel is a long syllable, but a long vowel with a consonant is a longer syllable.²

The conventional nature of these rules has been pointed out above. That a consonant + short vowel or consonant-group + short vowel should be always counted as a short syllable seems to be somewhat arbitrary. For the actual length of consonant + short vowel must have varied with different persons and dialects. Nevertheless these rules indicate that

1. Sanskrit version:-

yathā snātum avatīrpe ūrdhībhūtam ullāsitan apakārdh-
āntam, tathā ca snāta bhavaasi tvam svacche godhādī-tīrthe.

2. Bg Prāt. XVIII.20. gurur dirgham garīyam te yadī savyañjanam
bhavet, laghu savyañjanam hrāsvam laghīyo vyañjanād yte.

they were ultimately based on a phonetically sound principle of syllabic quantity. For they seem to refer to the actual duration of audition (see page 153) and show that long and short vowels did not mean orthographically long and short, but those pronounced long and short respectively.

The fact that these rules had a phonetic basis has an important bearing on the theory of Indian Metrics. The so-called "metrical license" is based on the psychological mood of the composer or the poet who, if not tied down by rigid rules, can intend any vowel to be pronounced short or long, although he has to write them short or long according to usage. Striking examples of this may be met with in Buddhist Sanskrit prosody, in which we sometimes find the metrical (i.e. phonetic) quantity of vowels different from their orthographic quantity. The following instances may be quoted:-

(a) Rāṣṭrapālāpariprochā page 8, line 19.

prajāṅgāgarakatham viśūḍhyate.

Here the second syllable jāṅ is written long, but pronounced short; the metre being Rathoddhatā, in which the second syllable is always short.

(b) Ibid. p. 18, line 3.

sūśrūṣakāḥ sada bhavanī gurugṇa nityam.

Ninth syllable ṛu written short, pronounced long.

Metre Dohaka. The author here presumably follows the actual Prākṛit pronunciation, in which the vowel before ṣu was usually long.¹

1. I owe the suggestion to Professor H. Jacobi.

(c) Ibid. p.3, line 20.

śrāvakabuddhasutān merutejāp.

5th syllable me written long, pronounced short.

Metre Dodhaka.

(d) Ibid. p.4, line 8.

stutyanayā rūpasāgarabuddhim.

5th syllable rū long for short. Metre Dodhaka.

(e) Ibid. p.6, line 7.

bodhisatvaganaṇṇ śrāvakās tathā.

A remarkable example: 5th syllable nāṇ - long vowel with visarga - for short. Metre Rathoddhatā.

The above examples, however, are not typical, because they are taken from artificial Buddhist poetry.

As regards e and o, Indian metricians¹ have observed that these vowels in Prakrit metre are sometimes short.

As regards Vedic metre, the Rg Prāt. gives us no explanation of the quantitative variations in the Rgveda. Its only general observation is that in metres of 8 and 12 syllables the last syllable but one tends to be short - a fact confirmed by the investigations of Arnold.²

Regarding the phonetic, as opposed to orthographic, basis of syllabic quantity, there occurs an interesting observation in Prākṛit Piṅgala. It states that "if the tongue articulates even a long vowel as short, it is short, and even two or three syllables, when quickly uttered, should be taken as one."³ And even in the rigid classical metre, 1. of. Vāpiḥṇṇapā I-6, Prākṛit Piṅgala I-4, and the examples quoted there.

2. Vedic Metre p.109. Rg Prāt. XVII-32.

3. Verse 5:-

jai dīho via vappo lahu jīhī padhai so vi lahu,
vappo vi turia padhai do tippi vi ekka jāpahu.

Note the examples given there.

Piṅgala's rule¹ is well-known that a short vowel at the end of a pāda is taken as long when metrically necessary. In this connection some metricians have pointed out a divergence which the MS. work the Vṛttamuktāvalītarala explicitly attributes to phonetic reasons. It states that this syllabic lengthening of the short vowel (at the end of a pāda) occurs only in certain metres as Indravajrā, Vasantatilakā etc., but not in other metres as Vamśastha, Indravamśa etc. In metres of the latter type, says the author, the lengthening does not occur because "the rhythm (lit. 'connection') is broken (lit. 'loosened') But the breach or non-breach of rhythm is a matter in which one's own pronunciation is the judge."² In other words, the author here maintains the phonetic basis of rhythm. Again, in connection with this point, the psychological element of Rhythm has been pointed out by Hemacandra in his Chhandosaśāna,³ who quotes an authority to the effect that in certain metres the lengthening in question "is not so agreeable to the ear." This line of demarcation, maintained by Hemacandra, Svetaṭapa and several other metricians is combated by Halāyudha,⁴ who states that the lengthening in question is not restricted only to certain metres, and that "it is only an exception to the general rule." And even that

1. I-22.

2. India Office 1715b, Folio 2:-

pādānte laghus tu vamsasthendravamsasthādibhinneṣv indra-
vajrādīṣv eva gaureṣv labhate, na punar vamsasthādīṣv api
bandhasaithilyāt saithilyāsaithilye ca svocārapa-
nāpika.

3. p.1 (Commentary):- vamsasthakādi-carapānta-nivṛtīnāṃ
gatvaṃ laghor na hi tathā śrutisāmaśāyī.

4. On Piṅgala I-10.

rigid classical poem, the Śiṣupālavadha, does not follow this restriction.¹

The syllabic quantity of the vowel, then, under certain conditions, could be adapted to metrical requirements, both in primitive and middle Indian.

Rule II. A short vowel before a consonant-group makes a long syllable.²

The validity of this rule will be evident from the copious examples given in the chapter on Syllabic Division. The doubling shown by MSS and the living dialects indicates that a vowel+consonant-group gave a long syllable. Moreover, compensatory shortening of vowels in Pali, as in amāṇas, further corroborates the rule.

Again, the evidence of metre, on the whole, confirms the same phenomenon, for a consonant-group, both in Sanskrit and Pali, generally tends to make position after a short vowel. The metricians,³ however, have pointed out several exceptions, as in the case of consonant-groups pr and hr. But, these exceptions are more frequent in Pali and Prākṛit - and in Buddhist ^{Sanskrit} Poetry, which was practically Prākṛit masquerading as ^{Sanskrit} -, and therefore there is considerable truth in the remark of the MS work the Vṛttaratnākarādarśa that "these exceptions concern only dialects like Prākṛit."⁴

1. Ibid. I may refer to the 5th chapter of this epic, in which such lengthenings are very common, cf. V. 64, 65 etc.

2. Rg Prāt. I-14, Taitt. Prāt. XII-14.

3. Bollensen ZENG Vol. 14, Meillet MSLP Vol. 18.

4. India Office 1535b. Folio 8, īyaṃ ca paribhāṣā prākṛtā-dibhāṣāyaṃ eva vastutas tu sūtrādigranthoḽv anukṛtatvāt saṁskṛta-bhinna-viṣayaṃ eveti yuktam.

Thus in the *Sisūpālavadha*, the consonant-group hr occurs 147 times after a short vowel, but it has not even once failed to make position.¹ The consonant-group hr occurs twice after a short vowel in the same work;² it has made position once, as the metricians have pointed out.³ But even here, as the *Vṛttaratnākaraḍarsa*⁴ states, the commentators have corrected the line (in X.60) by changing nābhihrada- into nābhinada-.

1. I 12, 13, 23, 44. II 54, 56, 64, 4, 8², 15, 18, 19, 34, 36, 37, 38, 55, 63, 64, 66, 67, 89, 92, 110. III 1², 5, 33, 36, 37, 41, 44, 52², 53, 54², 56, 64², 67, 70, 76, 81. IV 3², 5, 11, 27², 35, 40, 55, 56. V 4, 12, 22, 25, 27, 28, 36, 43, 54, 67, 69. VI 7, 25, 62, 65, 76, 77. VII 7, 10, 21, 23, 29, 42, 66, 71, 74. VIII 4, 6, 16, 24, 25², 27, 32, 35³, 37, 38, 40, 44, 45. IX 1, 6, 12, 20, 26, 30, 37, 42, 43, 48, 50, 55, 63, 69, 71, 79, 84, 77. X 3², 10, 14, 15, 20², 22, 37, 44, 60, 63, 65, 63. XI 6, 9, 13³, 22, 27², 39, 46, 54, 57, 59, 60, 67. XII 6, 14, 29, 31, 50, 51, 72, 76. XIII 3, 6, 12, 19, 30, 31, 37, 43, 44, 48², 57. XIV 6, 7, 22, 28, 29, 30, 36, 49, 50, 73, 74, 79, 81, 88. XV 11, 19, 27, 32, 35, 73, 86. XVI 1, 15, 17, 21, 37, 56, 63, 76. XVII 3, 9, 11, 20, 34, 36, 42, 44, 49, 50, 51, 52. XVIII 3, 5, 15, 18, 23, 30, 34, 36², 44, 45, 46, 47, 49², 52, 54, 58, 62, 63, 67, 76, 78. XIX 6, 7, 8, 37, 111, 116. XX 4, 10, 16, 19, 35, 36, 41, 44, 46, 56, 71, 72, 76.

2. V.59, X.60.

3. Bollensen opt.cit. ad.loc.

4. Folio 6., prāptanābhihrada iti nāghapadye chandabhaṅgabhaṅgārthap hrada-sabdān apanīya nadasābdodayap. Tārānātha's Edition (p.487) actually reads nābhinada-, and though Mallinātha reads it as hrada- he converts it into nada- :- "nābhir eva nado hradaḥ." As regards examples from Kālidāsa and Bhāravi,^v cf. Bollensen opt. cit.

Consonant-groups in Buddhist Skr. prosody.

While consonant-groups in classical Skr. prosody on the whole rigidly make position, Buddhist Skr. prosody shows considerable license in this direction. I undertook in this connection a special study of consonant-groups which do not make position in Buddhist Skr. prosody, and the following are the results of my investigation :-

Besides several consonant-groups of this nature which Jacobi¹ and Hopkins² have discovered in the Rāmāyana and the Mahābhārata, e.g. nr, (being the most common³) ks (next in order of frequency⁴), sr, tr, kr, dr, hr, vr, bhr and ddh, the following additional consonant-groups not making position in Budd.Skr. prosody may be mentioned:-

1.	<u>Rāmāyana</u> , p. 88 ff.				
2.	The Great Epic of India, p. 248 ff.				
3.	eg. in the Śiṣṭā-samuccaya	page	line		
		108	11		
		112	2		
		114	7		
		111	14		
		4	13		
		17	1		
		4	2		
		44	9		
	<u>Rāstrapāla-pariprocchā</u>	3	12		
		page	line	page	line
		63	7 etc.		
4.	eg. Skam.	115	19	115	6
		218	5	118	15
		115	15	1	2
				5	5

- (1) sr Ibid. p. 46, l. 16.

srjati ca sahasraṃ vai rāmi-kotir anantān.

sr in saahasraṃ¹ does not make position: metre Mālinī.

- (2) sy Rāṣṭrp. p.17, l. 17.

paḥasu te gatiṃ bhramiṃyanti².

9th short; metre Dohaka.

- (3) sth Rāṣṭrp. p. 53, l. 4.

pratisthāpayanyapi jagad bhagavan.

And short; metre Pramitākṣarā.

- (4) nn Skm. p.106, l. 13.

bhavaty assu tatpravaṇas tannimāḥ.

9th short; metre Upendravajrā.

- (5) rh Skem. p. 93, l. 6.

ye cāpi kecit tarhi śikṣamāṇāḥ.

6th short; metre Indravajrā.

- (6) nn Skem. p.103, l.2.

naitri-aneha-mṛti-bhājanam drdham.

4th syllable short; metre Rathoddhata.³

- (7) sph Skem. p.396, l.7.

śreṣṭhī-kuleṣu sphīteṣu.

5th syllable short; metre Anuṣṭubh.

-
1. Prof. Jacobi suggests to me that saḥasra is a common form in Apabhraṃśa, but it is possible that the pronunciation of sy in bhrami-gyanti and sr above was transitional, in some dialects to its change into h through undoubled g, and the syllabic division bhrami-gyanti may have been an indication of this tendency (cf. the remark of the Varṇa-Śikṣ on non-doubling of g, see p. 190).
 2. Prof. Jacobi here suggests that the poet had in his "mental ear" the Prākṛit form bhamihanti.
 3. Further example in Rāṣṭrp. p.7, l.13.

(8) SD p.204, 1.5.

śubha-gandha-rasair vara-sparśa-sukhaih.

6th syllable short; metre Totaka.¹

(9) RA Rāṣṭrp. p.50, line 11.

mrdu-cāru-anigūha-sūbha-keśa-nakhā

4th short; metre Pramitākṣarā.²

(10) sth Śkam, p.153, 4.

īatyandhya-daurbalyam athālpā-sthānatām.

9th short; metre Indravajrā.³

(11) sk p.256, 4.

tatha imi (?) vidu-skandha-prekṣamāṇah.

6th short; metre Puspitāgrā.

(12) ay Rāṣṭrp. p.7, line 12.

dharma-śvāmī prapañcāmī nāyakaṁ.

2nd short; metre Rathoddhatā.

(13) dhy Rāṣṭrp. p.5, line 15.

kpānti-vīrya api dhyāna-sikṣitah.

6th short; metre Rathoddhatā.

(14) oy Śkam, p.204, line 1.

nata-ranga-samā jagi-jama-cyutih.

10th short; metre Totaka.

(15) ty Śkam, p.250, 8.

tatha tvaya (?) dyṣṭa maharṣi-sarva-dharmāḥ.

2nd short; metre Puspitāgrā.

1. Further example in Rāṣṭrp. p.9, line 5.

2. Further example in Śkam. p. 103, line 2

259, 1

204, 6.

3. do. do. do. do. 205, 15

102, 2

55, 12.

(16) gr Skm. p.47, 7.

sad-dharma-prati-grāhakāh.

5th short; metre Anuṣṭubh.

(17) jñ Skm. p.8, line 11.

varddhapi-jñāna-viśēpa-sukhānām.

3rd short; metre Dohaka.

There is no doubt that most of the above consonant-groups stand in the beginning of a word (separate or member of a compound), and we know that in Prākṛit the initial consonant-groups of Skr. were generally simplified

(Pischel p.185). When therefore gr in pratigrāhaka-, jñ in jñāna-, gr in śruti- etc. did not make position, they represent that stage of the language when they began to be pronounced like gāhaka- hāna- śrti etc. Moreover, the actual pronunciation of gr and sr in the suffixal position, as shown above may have been h and g. Nevertheless, it is more probable that these laxities in syllabication represent a transitional stage to Prākṛit pronunciation proper in the language of the more educated Buddhists. For several other consonant-groups are apparently cases which do not indicate the influence of Prākṛit, cf. rh in tārhi, ṣṭh in pratipṣṭhā- nn in tanninnah in the above examples. They may indicate that the pronunciation of Buddhist literary Skr. tended to go the same way as Prākṛit did perhaps centuries before the date of these compositions.

Again, the group fricative + plosive not making position, as in skandha-, sparsa-, pratipṣṭhā, etc. seems to confirm my theory (see page 126) that in syllabic division the fricative of this group tended, in actual pronunciation, to belong to the succeeding syllable.

Rule III. A short vowel + Anusvāra Makes a long syllable.¹

This rule does not require a lengthy comment. From pp. 137 and 242 ff. it will be clear that all depended upon the nature of the anusvāra, the pronunciation of which varied with different dialects.

The rule is generally confirmed by Skr. metre, where anusvāra makes position. But, according to the author of *Prākṛta Piṅgala*,² anusvāra of the less prominent type, called the bindu, sometimes did not make position.

1. Rg Prāt. I-14 ad loc.

2. I-4. cf. the examples given there.

1. VI.3. sanyuktan by vyañjanam sākalera.

2. VIII.4.31 savātra sākalera.

(2) The second view DOUBLING is held by all the Pratiśākhya schools.

As regards doubling, three different views current among Indian Grammarians may be mentioned:-

(1) The first view, according to the statement of the Ṛg Prāt.¹ and Pāṇini,² was held by as ancient an authority as Śākalya, who asserted that doubling never took place. It is not decidedly clear from the phraseology of the Ṛg Prāt. and Pāṇini whether Śākalya was referring to phonetic or merely orthographic doubling. If Śākalya meant thereby that phonetic doubling never occurred in Sanskrit, he was wrong, as has been shown in the above pages from the evidence of the living dialects. The doubling in Pāli and Prākṛit would not have taken place had not Sanskrit as a spoken language paved the way for it. Secondly, the assertion "never" was incredibly sweeping. The actual existence of spontaneous doubling in Sanskrit, Prākṛit and some of the modern vernaculars disprove Śākalya's dogmatic statement. Thirdly, ancient inscriptions and manuscripts would not have transcribed double consonants if they had never been pronounced double. If, however, Śākalya found doubling so predominant in Sanskrit, that he thought it unnecessary to transcribe it orthographically, his view might be acceptable, though it could not serve as a guide to succeeding generations. Śākalya's prohibition was presumably an admonition against excessive tendency to doubling actually existing in certain dialects of his time.

1. VI.3. samyuktam tu vyañjanam śākalena.

2. VIII.4.51 sāvatra śākalyasya.

(2) The second view, represented by all the Prātisākhya¹ and some of the Śikṣās, lay on the other extreme. It required the first member of every consonant-group to be doubled, when it was preceded by a vowel (adya = addyā, mukta = mukhta), with a few exceptions to be detailed below. And it has been amply demonstrated above that the evidence of the living dialects corroborates the fact that this tendency for doubling was predominant in spoken Sanskrit, but the divergent tendencies, however secondary, illustrated in the above pages by the Prākṛit word rāi for rātri, and pu for putra, show that the extremist view held by the Prātisākhya¹ was not applicable to all the spheres of Sanskrit pronunciation.

(3) The middle course was adopted by Pāṇini,² in whose opinion consonants, under the conditions similar to those laid down by the Prātisākhya¹, ^{may} ~~must~~ be optionally doubled. This view indicates that Pāṇini had noticed the existence of both the tendencies, though the option mentioned by Pāṇini is indefinite, and does not show which of the two tendencies was more predominant, and where each particular tendency could be located.

1. Prāt. svarānusvāropahito dvirucyate samyogādēh Prāt. XIV.1
Atharv. Prāt. III. 28. Vāj. Prāt. IV. 100. Vyāsa Śikṣā: sva-
pūrvam ijād dvitvam vyāñjanam vyāñja Varnaratna-dīpikā Śikṣā
S' S p. 130. [note.]

2. VIII - 4 - 45 - 50. avarāṇādhāraṇāt svaranādhye samānāpade
gat kvacit svaraṇādhāraṇāt dvitvam pūrvāgamopī vā
uccāranādina spāṣṭāy tad aha na vidhigatē.
quoted by Prof. Lüders in Vyāsa Śikṣā, p. 18.

Intervocalic Double Consonants

As regards the pronunciation of intervocalic double consonants, the Vāj. Prāt.¹ states that they should be pronounced as single, e.g. kukkuṭah should be pronounced as kukūṭah, dattah as datah.

The author attributes it to the ^{re}suppression or ^{will be}dhāraṇā of the first consonant. And as ^{chapter, cf. 219ff,}I have pointed out in the ^{next} above pages, the author's view is consistent with the predominant tendency for lax articulation of intervocalic consonants among Indian dialects. But as ^{will be}I have also shown ^{presently}above, the strong doubling of intervocalic consonants in some of the modern dialects and the not infrequent traces of original doubling in literary records indicate that the view of the Vāj. Prāt. was not applicable to all the spheres of Sanskrit pronunciation. That the pronunciation of intervocalic double consonants was variable was correctly noticed by the Vasiṣṭha Śikṣā.² This Śikṣā states that wherever there is a doubling between two vowels, its actuality can be determined only from a particular pronunciation and cannot be brought under a definite rule.² There is no doubt that this remark of the Śikṣā cannot be accepted without reservation, and that by closer observation of phonetic phenomena the author might have discovered a number of definite divergent tendencies which could be brought under

1 IV.142 dvivarnam ekavarnavad dhāraṇāt svaranadhye samānāpade.

2 gat kvacit svarayor madhye dvitvam pūrvāgamopi vā
uccāranādinaṁ spāṣṭam tad atra na vidhīyate.

quoted by Prof. Lüders in Vyāsa Śikṣā, p.18.

a set of definite laws, if not under a single rule.

But nevertheless the Śikṣā is right in pointing out the actual existence of these divergent tendencies. Some of these particular data of intervocalic doubling have been mentioned by the Sarvasammata Śikṣā¹, which states that sometimes an additional "b" is added to bhuḥ after the prefix pari, so that pari + bhuḥ becomes paribbhuḥ, and sometimes an additional "k" is added to khid after a prefix e.g.

ākkhidate, prakkhidate. Similarly, continues the Śikṣā, sometimes intervocalic double consonants are pronounced double as they are orthographically written, as in attā havīṃsi, annapate, addhi.

Original Doubling of Intervocalic Consonants

The above point then leads us to the question whether there are any traces of original doubling of intervocalic consonants in Sanskrit. In the Chapter on the Syllable I have pointed out that as a general rule consonants are doubled in Sanskrit only when members of a consonant-group; and I am ~~of opinion that~~ the original doubling of consonants in intervocalic position is a scarce phenomenon in Sanskrit. This original or spontaneous doubling should not be confused with two similar consonants in conjunction, as in dattam, ṭṭam, in which the consonant "t" has not been doubled; here we have rather two "t's" of different syllables coming in conjunction. ~~I have closely~~ ^{An} ~~investigated~~ ^{ion into} this matter, ~~and~~ ^{has led to} the following ~~are the results of my inquiry~~ ^{conclusions:-}

¹ Frank's Edition 6, 7. cf. Jāt. Brāt. XIV-8.

There does not appear to be

~~any~~ any conclusive evidence of original doubling in the Vedas. In the R̥gveda there are three words, ciccikā¹ (n of a bird) (X.146.2), jaḥjhatiriva (sounds of the waters) and the oft-quoted akḥkhalīkṛtya (the sounds of frogs) which are onomatopoeic words, and so might well represent two consonants put into conjunction rather than original doubling. It may be suspected in the word pippalā², though Grammarians² derive it as an irregular intensive form of the verb pi or pī. But there are no indications of any general tendency to original doubling in the R̥gveda. Similarly in the Yajurveda *there seem to be* ~~have come across~~ only five words which prima facie indicate original doubling. These words are vr̥kḥā¹ (XV.8)

¹ Benfey (Vedica pp. 137-8) traces it to has, through jaghas, (indg. ḡzh). In either case it is not original doubling.

² of. Deverāja Yajvā's remarks on the Nighantu p.102 (Satya brata Sānāśrami's edition).

tittiri¹ (XXIV.18), kukkuta² (I.16), kakkata³ (XXIV.32),
 and pilippita⁴ (XX.12). And yet a moment's reflection will
 show that these cases are not cases of doubling, but of
 two independent consonants happening to come side by side.
 The first is probably formed from the root vrk + the
 suffix "k"; the next three, being names of birds or
 animals, represent onomatopoeic sounds as in 'cuckoo',
 while pilippita is a doubling of the word pili with an
 intervening glide sound "p". Other doublings in the
 Yajurveda are either clear cases of assimilation or of
 two consonants coming side by side, e.g. in golattika
 (XXIV.37), which is formed by the addition of the suffix
tik to golat, after the analogy of parttika, bhattika
 (Vide Unādi Sūtras III.147). In the Sāmaveda a single
 word jyokka 'long' (II, 9-13.3) may indicate such doubling,
 but the original form of the word being jyot (cf. Nighaṇṭu
 I - 16, where dyotate - jyotate are put side by side),
 this may be the result of the assimilation of "t" to the
 succeeding suffix ka.² Similar remarks may apply to
 four words in the Atharvaveda, viz. pippaba³ (IX.14.20),
pippati⁴ (VI.109.1), pippati⁵ (XX-136-7) and vrkka⁶ (VII.101.1).

¹ Even if kk here is an assimilation of tk as indicated by Avestan vartha, it is not original doubling. But cf. Turner: BSOS Vol. IV, pt. II, p. 369.

² More probably, however, jyokka is a suffixal extension of jyók which also occurs in the same Veda II, 4, 4, 6.

³ So read the Ajmer Edition as well as the Nirṇayasāgar Index, but Whitney reads pipyati, which shows that pippati, if correct, indicates Prakritic assimilation.

and the Atharvaveda is gugulu- indicating in the

The Brāhmaṇas.

There occur ~~I have come across~~ a few interesting forms in the Aitareya Brāhmaṇa which give indications of dialectic borrowings of words with original doubling. The first is samā (XI.1.) = samā, 'equal', on which the doubling, others showing Prākṛit assimilation. Another commentator remarks, 'the second "n" in samā is Vedic case of original doubling may be noticed in the Panchviṃśa (chāndasaḥ)' ¹, - a stock explanation of commentators whenever they are unable to find grounds for a linguistic being the proper name of a man. These sporadic cases or grammatical irregularity. The commentator is are not, of course, indications of a general tendency for evidently wrong, because, as the above facts will indicate, original doubling in the Brāhmaṇa period, but they do betray there are no indications of such doublings in the Vedas. it in some dialects of the period. ^{either} The doubling, then, is not Vedic, but a dialectic borrowing ^{or} a suffisal extension of sam(+mā). Another word occurring in the same chapter of the Aitareya Brāhmaṇa (XI.10) is *avaprajjana which means 'the hem of a garment'. The St. Petersburg Dictionary derives the word from prj or parj, a derivation which is not convincing. The Nighantū, therefore, does not offer us any definite and which does not explain how parj, unlike varj, became prajja, with a doubled "j", unless it was a dialectic borrowing. Some of the collections in Pāṇini's Dhātupāṭha throw interesting light on the subject. It is striking to note not because it manifests original doubling, but because it indicates how Prākṛitism had begun to affect even the Aitareya Brāhmaṇa. The corresponding word in the Śatapatha Brāhmaṇa ²

1. "samā" ityatra dvitīyo makārah chāndasaḥ (XI.1)

2. III- 5-2-16

and the Atharvaveda¹ is gugulu- indicating in the gugulu- of the Aitareya Brāhmaṇa the assimilation of "l" to the succeeding plosive. Forms like garu and gugulu- give us a glimpse of the dialectic tendencies in the period of the Aitareya Brāhmaṇa, some indicating original doubling, others showing Prākṛit assimilation. Another case of original doubling may be noticed in the Pañcaviṃśa Brāhmaṇa (XIII, 4, 11, 10, 8), viz. in the word "Alama" being the proper name of a man. These sporadic cases are not, of course, indications of a general tendency for original doubling in the Brāhmaṇa period, but they do betray it in some dialects of the period.

The Nighaṇṭu mentions two verbs hamati (II.14) and drumati (II.14), but as side by side with hamati we have another reading hamyati, it is possible that the double consonants in both of these verbs indicate mere assimilation. The Nighaṇṭu, therefore, does not offer us any definite data of original doubling.

Some of the collections in Pāṇini's Dhātupāṭha throw interesting light on the subject. It is striking to note that the roots att, cudd, add and kadd are given in the Dhātupāṭha as atta, cutta, adda, and kadda, the final cerebral consonant being preceded by a dental, indicating that the

1. II.36.7, XIX.38.2.

cerebral doublings in att etc., are really cases of assimilation. But there are several other verbs in the Dhatupāṭha which may contain double consonants.

These are, for instance, bukk to speak nakk, dhakk,

'to destroy' cakk, cukk, cikk 'to trouble', phakk 'to go down', kutt cf. kuttima, kottapāla, malla to support,

bhall to injure cf. bhallūka - 'a bear', vell to move.

Cf. also akkā, allā, being the names for 'mother' mentioned by commentators on Pāṇ. VII.3.107. Possible cases of

spontaneous doubling, then, begin to appear the more numerous, the more distant we are from the Vedas. I say only 'appear', because it is possible that even these doublings might have been originally due to assimilation.

In classical literature, especially in lexicographical works and in the medical work Susruta, names of several herbs occur, and these possibly indicate original doublings, as they cannot be explained on the grounds of assimilation.

~~Let me give~~ A few examples of these words, ^{may be found in} ~~collected by~~

^{the} ~~as from~~ St. Petersburg Dictionary:- ikkala, ikkata,

kakkola, cuccū, pakkatī. Similarly several words

relating to forest and village life may be mentioned,

cf. pakkana - 'hut of a savage', palli - 'village',

pottali - 'a bundle', Pukkasa, Bukkasa, names of particular

low castes, kikkisā, an injurious insect, kujisā, name of a fish mentioned in the Rājataranginī. These words

indicating original doublings were possibly dialectic borrowings and then passed current into classical Sanskrit. But it would be rash to maintain definitely that there are cases of original doubling and not of assimilation.

Many proper names of persons and places occurring in inscriptions, the Mahābhārata, the Kathāsaritsaṅgāra and particularly the Rājatarāṅginī possibly offer interesting and copious data of original doublings, as they cannot be explained on grounds of assimilation cf. Rissaka, Jajja; names of two persons mentioned in a Sanskrit inscription, the Mahābana Prasasti¹. The following collections from St. Petersburg Dictionary may be of interest:-

Illaka: a proper name occurring in the Kathāsaritsaṅgāra.

Āraṭṭa, Kaukuṭṭaka and Jillika-- names of countries mentioned in the Mahābhārata. Several proper names of persons

and places mentioned in the Rājatarāṅginī, cf. Chudda;

Jaggika, Jajja, Jajjala, Takka, Tikka, Dhakka, Thakkana;

Diddā, Dhamata, Dhamatikā, Nājjaka, Madda, Murruni;

Lukkaka, Sujjaka, Sulakka, Sussala; and Hinnaka.

Cases of original doubling in Prākṛit have been noted by the Indian Grammarians Hemacandra and Vararuci, vide

Fischel pp. 141 ff. I have collected the following from

Prākṛta Piṅgala:- uppārī, corresponding to Sanskrit uparī,

uppāu = Skr. upāya; ~~jagga~~ x ~~yaga~~; ~~kuppa~~ x ~~kupātāh~~; ghitta =

~~ghrtāx~~. jamakkā = yamakkau; ~~tuttā~~ x ~~truttāti~~;

1. Vide Epigraphia India, Vol. I.

ḷita:- The quantity of the vowel in the corresponding Hindi words ūpar and ḷita proves that the parallel Prākṛit forms for these two words contained really double consonants. In a work in ancient Kashmiri Dialect, the Mahānaya Prakṛas¹ of Śitikanṭha, ~~I have come across~~ ^{there occur} several cases of original doubling, e.g. ruceī for ruce; gatta for gata; kitta for kṛta; akka for eka; though the doubling in the last example, as in Prākṛit, ~~might~~ ^{may} have been due to the reduction of the quantity of the initial vowel.

Isolated tendencies of original doubling, then, though rare, are not entirely absent from Indian dialects and they appear to be the more frequent the more distant we are from the Vedas.

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- [illegible]

Indian Grammarians do not prescribe doubling of final consonants. The only exception is the authority of the Atharv. Prāt.^{III-26} which explicitly lays down that the final consonants of words are doubled. We have no record of such doublings in Sanskrit except in liaison, while Prākṛit, as is well known, has dropped the final consonants instead of doubling them. If the phenomenon ever occurred, it must have been confined only to certain isolated areas, which it is difficult in this age to locate.

All grammatical authorities,¹ however, are agreed that the final "n" or "ṇ" when preceded by a short vowel and followed by any vowel are doubled, e.g. pratyāñ-atra = pratyāññ-atra, sañ-atra = saññatra. Even in this case the Pārisīkṣā and Vyāsa Śikṣā² state that the final nasals, although written double, should be pronounced only once. When a consonant follows, however, then, according to the Varṇeratnadīpikā Śikṣā,³ these nasals, like all "final" (i.e. not strictly final in the sense that they should not be followed by any word) consonants may be doubled, e.g.

āpnuvanpūrvam, ^{as in} ~~as in~~ samyakkaravanti, tattkaroti.

1. Atharv. Prāt. III. 27 ṇapānā hrasvopadhān svarē. Rg Prāt. VI. 4, Vāj. Prāt. IV. 106. Pāṇ. VIII. 3. 32.

2. hrasvātpara nāda iha dvirūpe varṇakrame tañ sakṛduccared jñāh; hrasvāt paro nādo (a)vasāne pañcamo varṇo dvirūpavargo bhavati tathāpi varṇakrame varṇakramanoktikāle taññādan sakṛd ekavāraṃ uccared brūyat. Pārisīkṣā-tikā yajurṇbhūṣaṇa - from the Chapter on Doubling . 170. Similarly Vyāsa Śikṣā:- hrasvadvirūpavan nādo yadetan sakṛduccaret, varṇakramanoktikāle tu nānyasanyogamuccaret.

3. s's p. 130 sanyogādih svarād dvitvaṃ prāpnoti ti vidur budhāh, tat padānta-padādyorvā padanadhyepi sarvataḥ, samyakkaravanti sarītaḥ sandhau tu padayor yathā, XX. 10.

But although this Śikṣā calls them "final consonants", they cannot be strictly called final, as they are followed by other consonants, and their doubling is really a case of liaison rather than doubling proper. Similarly doubling of final "ñ" or "n" before vowels is also really a case of liaison. For the final "n" represents in many cases an original Indo-germanic nt which by assimilation from the succeeding vowel became nd and was finally changed into nn, skā. san = Indo-germanic sonts. Similarly final "n" represents even in Sanskrit declension iks, pratyah being really pratyahks. The so-called additional consonant was conserved or reappeared in liaison.

Doubling in Sandhi.

On doubling in Sandhi there occurs an interesting observation in the Cārāyaṇīya Śikṣā¹: "Sounds undergoing Sandhi are doubled. When there is no Sandhi, they should be taken as only short. Sounds undergoing Sandhi should be pressed like oil, sounds without Sandhi should be treated like leaves. When a final consonant precedes another initial consonant, the former is always doubled." In the first place, the author's

1. sandhiprāptas tu ye varṇas teṣaṃ dvirbhāva iṣyate, abhāve sandhinā caiva laghutvaṃ caiva nirdiśet. / tailavat pīḍayed varṇān sandhiprāptāṃsu sarvadā, sandhinā rahitāṃścaiva paṇavacca samācaret. vyañjanāntaṃ padaṃ pūrvam tadvarṇam cāparaṃ bhavet, dvirbhāvaṃ taṃ vijāniyāt sandhikāle tu nityaśaḥ.

use of the term "short" for a non-double sound is interesting, as it indicates that the opposite sound, viz. the double one, was, in the author's view, only long in quantity, and that the author did not mean thereby two distinct individual sounds.

But as regards the author's observation that sounds in Sandhi are doubled, as in samyakk eravanti, tattprāpnot, the author's view is not consistent with the general theory of Syllabication discussed above, if by 'sounds' he means the 21 consonants to be specified below. For ~~in my opinion~~ the general tendency of the language and the rule of Syllabication that all final consonants went with the preceding syllable could not allow the doubling of final "t" in Sandhi. According to the general theory of the language, the final "t" in this case was implosive and was entirely lost in Prākṛit, and so it was hardly likely that it was phonetically doubled. ~~Therefore, think that~~ The

doubling of final consonants before other consonants in Sandhi which is only rarely met with in a few Mss., had ^{therefore} more of a conventional than phonetic basis, and consequently, ^{it is improbable} ~~I do not think~~ that in actual colloquial Sanskrit final consonants were pressed like oil, as the author would have it: they behaved more like leaves, in the sense that in actual speech the final consonant was not so compactly connected with the succeeding initial consonant even when, in orthographic transcription, the connection of the consonants was represented by Sandhi. Thus in connected speech yāvāt hi in orthographic Sanskrit became yāvaddhi, and ^{there is} ~~no~~ doubt that in formal recitations and X academic Sanskrit it was pronounced yāvaddhi, but considering

the fact that the corresponding Prākṛit form is iāva hi and that the most ancient Grammarian's rules of Syllabication require the final consonant to go with the preceding syllable, ^{it seems} ~~think~~ ~~it to be~~ likely that in actual colloquial speech it was more often pronounced yāvat hi than yāvaddhi, although orthographically written yāvaddhi.

Indian Grammarians had also noticed the difference between merely orthographic Sandhi and phonetic Sandhi of finals. Thus commenting on Taitt. Prāt. V.1. the Vaidikābharana¹ points out that "Finals are of two kinds; those given in the texts (i.e. orthographic) and those due to the incapacity of the speaker (to continue the speech). Textual finals occur in regular positions at the end as well as in the interior of chapters and at the end of words and kramas. The other kind (i.e. phonetic) has no fixed place. Samhitā or connected speech is similarly of two kinds, textual and phonetic. In the latter case a unit of sound-group or Samhitā is that which is within the compass of a single breath". In this author's opinion, then, Sandhi or connected speech was actually determined by breath.

1. iha dvividho virāmah, samānāyasiddhaḥ, aśaktyādihetukācca
tatra samānāyasiddho 'nuvākānteṣu tanmadhyanityāvasāneṣu pada-
kramānteṣu ca bhavati. itarastv aniyatadeśaḥ. tatra samhitāyāmiti
pūrvasyābhāva ucyate, ekaprāṇa bhāva ityaparasyacca.

The author here speaks of a living phenomenon in the language, though ~~in my opinion~~ his observation was not adequate enough. For although the various phases of connected speech varied with the breath-force of the individual, the author, by assigning no fixed place to those ^{phases}, failed to notice or emphasize certain fixed tendencies in the Sanskrit speaker to treat all final consonants in a particular way, viz., to pronounce them as implosive.

Interesting directions have been given regarding the different treatment of orthographic and phonetic Sandhi, by Kaccāyana¹ in his Pali Grammar and by the author of the Kātantra². They give two rules side by side; firstly, according to that which relates to orthographic Sandhi, a final consonant is to be carried to the succeeding sound. Kaccāyana gives the example "tatrābhiratim iccheya", the final consonant "m" being carried to the succeeding sound "i". ~~And I hold that~~ ^{presumably} this rule was more orthographic than phonetic, for otherwise we know that the final "m" of Sanskrit was reduced to a mere Anusvāra in Prākṛit, and that therefore the tendency of the colloquial Sanskrit speaker was not to carry this final "m" to the succeeding sound. Side by side with this injunction to carry

1. I-10 pubbam adhoṭhitam assaram sareṇa viyojaye.
I-11 naye param yutte.

2. I.1.21 vyañjanam aṣvaram param varṇam nayet.
I.1.22 (ed. Liebhich p.16) anatikramayan viśeṣayet.

the final consonant to the succeeding vowel, the same authors prescribe that the final consonant of a word should be separated from the initial vowel of ^{the next} word, as in tatrāyam ādi.

~~I have no doubt that~~ This rule would have been contradictory to the other, if its scope had not been different. The scope of this rule was phonetic, the final consonant being kept apart from the succeeding word in actual pronunciation.

Similarly Patañjali, while commenting on Pāṇini I-4-109-110, indulges in a good deal of philosophical speculation on the nature of Samhitā and the finals, but subsequently bows to usage. It is difficult, he says, to define these terms.

"Some people define Samhitā as the closest proximity of sounds, but this definition would be inapplicable when the same sounds are uttered slowly. Some authorities restrict Samhitā to that connection between one word and another, when there is no interval between the two, but strictly speaking, with this definition the term would apply to any two consecutive individual sounds, for there is always an infinitesimal interval between them. Again, it is equally unsatisfactory to define a final, for in a sense every individual sound may be called final. The nature of Samhitā and the final should therefore be known only from usage. Thus when a man is reading, another may say to him 'read śanno devī⁺ by Samhitā, i.e. closely connected! And the reader then brings the sounds in extremely close proximity. And another person may ask him, 'What is the final sound of your reading?' And he may reply,

'the final is "a" or "i" or "U".' Both of these terms, Samhitā and the final are known to the world and their nature is to be known from usage in the world.¹ In other words, Patañjali here admits that Sandhi and the final were subject to the usage of the living dialects and were not bound to orthographical texts or grammatical rules. That even the Grammarians had to bow to this usage is further corroborated by the well-known maxim of Sandhi that it was necessary only within a word, but was optional between one word and another.²

When, therefore, the Cārāyaṇīya Śikṣā states that final consonants in Sandhi are to be doubled, the author is right if he is referring to formal recitation of Vedic texts or pronunciation of academic Sanskrit, but his rule does not hold so good of final consonants as actually pronounced in living colloquial speech, as the above testimony of the Grammarians, the tendency of the language and the general theory of Sanskrit syllabication will amply testify.

In the above paragraphs I have criticized, in the light of the general tendency of the language, the observation of the Cārāyaṇīya Śikṣā regarding the doubling of finals. But considering the fact that several other observations of this Śikṣā so correctly represent the facts, and that the Atharvaveda Prātiśākhya⁽¹¹⁻²⁶⁾ goes even further by stating that all final

3. VIII.4.50 triprabhrtiḥ śākaṭāyanaḥ

1. samhitāvasānāyore loke viditatvāt siddham.

2. samhitāikapade nityā nityā dhātūpasargayoḥ: cf. Bhandarkar, Journal of the Bombay Branch of R.A.S. Vol. 16.

consonants are doubled we have reason to suppose that these authors refer to an actual phonetic phenomenon which might have been confined to certain isolated circles among the spheres of Sanskrit pronunciation. I have referred above to academic Sanskrit in which doublings of finals were commonly observed; but one can hardly suppose that academic Sanskrit was not a living phenomenon in any grade of Sanskrit-speaking communities. It would be unreasonable to suppose, for instance, that English as spoken by educated London is not a living phenomenon because it does not typically represent the dialects of England. It was therefore not unlikely that the finals of consonants in Sandhi as in tatt-karoti were actually pronounced double among certain educated circles in Sanskrit-speaking India. Moreover, although we do not find strictly final consonants doubled in Prākṛit, certain dialects of Prākṛit show distinct traces of doubling of presuffixal finals and of the finals of prefixes. For instance, corresponding to Sanskrit eikitsā we have eikiechā side by side with eikissaa, for Sanskrit utsava-we have ucchava-in Māgadī and Sauraseni side by side with ussava-in Ardhamāgadī.

thereby that the group in question was to be within the same syllable, Sakatayana's view was sound, for it is hardly likely that the average Sanskrit speaker had the breath-force enough to pronounce, in addition to a group of three or four consonants, another consonant to effect the duplication, with a vowel to complete the syllable; e.g. it is hardly

This divergent treatment in Prākṛit of the final "t" before "s" may be further illustrated by the following examples:-

Prākṛit	Sanskrit	Prākṛit	Sanskrit
<u>kucchia</u>	<u>kutsita-</u>	<u>ussagga-</u>	<u>utsarga-</u>
<u>bīhaccha-</u>	<u>bībhatṣa-</u>	<u>usseha-</u>	<u>utsedha-</u>
<u>macchara-</u>	<u>matsara-</u>	<u>ussāsa-</u>	<u>ut-śvāsa-</u>
<u>vacchala-</u>	<u>vatsala-</u>	<u>tassamkin-</u>	<u>tat+śamkin-</u>

Examples like cikicchā indicate that certain dialects had a tendency, not only to maintain the final or semi-final "t" in Sandhi, but also to double it, for the "t" in these examples has not been dropped; it has been doubled and palatalized. In the other set of examples, however, as in ussagga, the general tendency was followed by dropping out the "t", though even here the "t" left its trace behind by the doubling of "s".

Limits of Doubling.

As regards the limits of doubling, Pāṇini quotes the opinion of ¹Śākaṭāyana, who holds that doubling cannot occur in a group of three or more consonants, e.g. doubling cannot occur in pakṣmaⁿ, vaktra, kārtavya. If the author meant thereby that the group in question was to be within the same syllable, Śākaṭāyana's view was sound, for it is hardly likely that the average Sanskrit speaker had the breath-force enough to pronounce, in addition to a group of three or four consonants, another consonant to effect the duplication, with a vowel to complete the syllable, e.g. it is hardly

likely that in kārttsanya-the average speaker could double the "n" which the phonetic rules of Sanskrit required, as will be explained below. But if the author meant the group to be within a single word, irrespective of syllabic division, then his view was phonetically unsound. For there was no reason why doubling should not have occurred in yaktra-so that the syllabic division was yakk+tra, the doubled "k" belonging to the first syllable. At any rate, this ancient authority's rule was a reasonable warning against the monstrous conventionalities of unnatural doubling so often met with in Sanskrit Mss. and inscriptions. Thus the Gautamī Śikṣā¹ gives instances of groups of six and seven consonants in dhakkkavyau and kuṇṇkskavyau, which the average human being could hardly pronounce, though it is a relief to note that even the author of the Gautamī Śikṣā puts a limit to the total number of consonants forming a single group and states in this connection that there does not exist a consonant-group consisting of more than 7 members. Moreover, that Śākaṭāyana's restriction referred to a living phonetic phenomenon in some of the dialects is corroborated by Prākṛit ṣaṇḥa-for Sanskrit ślakṣaṇa, paṇḥa^a- Sanskrit, pakṣman-tiṇḥa- = Skr. tikṣṇa, (though tikkha- has also been met with),. These examples show that at least some spheres of Sanskrit pronunciation were averse to doubling when the consonant-group consisted of 3 or more consonants.

S'S p.450 gautamenoktaṃ na saptaṅśarāt paraḥ saṃyogo bhavati

cf. p. 86.

Besides the above "three-consonant" restriction on doubling attributed to Śākāṭyāyana, the Vāj. Prāt.¹ states that no doubling can occur before the vowels "r̥" and "l̥" and before the Yamas. Thus there will be no doubling of the consonants in vismr̥ta, anistr̥ta, rdhiḳṣipta and ruḳma. As regards the non-doubling of the consonant before "r̥" and "l̥", I do not know what phonetic grounds led the author to prescribe the restriction: perhaps the consonantal element of these vowels brought about a condition similar to the three-consonant restriction above and thus made the consonant-group too unwieldy for doubling. The manuscripts examined by me seem to confirm our author's view, for they do not double the consonant ~~after~~^{before} these vowels, but the evidence of the living dialects in this matter is not definite. For although we have no parallel of doubling in the dialects for Sanskrit vismr̥ta, Lahndi has visria, dropping out the "m" altogether, while Pali has visarati or visumarati. But as we have at the same time Pali vitthata for Skr. visr̥ta, ^{it is} ~~we do not think it safe to~~ accept without reservation the Vāj. Prāt's prohibition of doubling before "r̥" and "l̥".

~~I think~~^{presumably} there were phonetic grounds for the author's

1. IV - 111-113. r̥varne. l̥varne. varne.

1. IV. 161. ruḳma anistr̥ta rdhiḳṣipta

vismr̥ta visria visumarati

vismr̥ta visria visumarati

2. MSIP Vol. X. p. 117.

3. IV. 110.

prohibition of doubling before the Yama. The Yamas according to the theory of Indian Grammarians, were "twins", and thus represented partial doubling. Thus the commentary on the same work remarks that "in rukām, "k" is first doubled according to the general rule of doubling, and then the second "k" undergoes the stage called Yama"¹. For Yama literally means "twin" and the very term implies a double aspect, e.g. in rukām, "k", the first aspect, is non-nasal, and the other aspect "k" according to the Indian theory was slightly nasalized. *It is improbable* ~~I do not think~~, therefore, that the author, who knew this double aspect of the Yama, could so contradict himself as to say that no doubling occurred before a Yama. He seems to have prescribed, not against doubling, but against the further doubling of the plosive before the Yama. There were said to be, as Rosapelly² has shown, three stages in the articulation of the Yama-: (1) implosion of "k" (2) its partial release by the explosion of air through the mouth (3) its slight nasalization by the passage of air through the nasal cavity. With these three moments of articulation the quantity of the consonant was long enough not to require further doubling. And this prohibition of further doubling is quite consistent with another rule which the author gives among the same set of rules, viz. that consonants already doubled or homogeneous consonants are not doubled again³.

1. IV.161. rukām ityatra svarāt sanyogādīṣṭyādinaḥ
kakārasya dvirbhāve kṛte 'nena sūtreṇa dvitīyasya
kakārasya yama ityayaṁ kāryakramah kriyate.

2. MBIP Vol. X. p.317.

3. IV. 110.

Enumeration of Consonants that can be doubled.

Remarks that the fricatives are doubled in only two Sanskrit words, viz., in *śaśa* and *śaśaśa*. According to the *Lomaśī Śikṣā*¹ there are 21 consonants that can be doubled, viz. the five breathed unaspirated plosives, the five voiced unaspirated plosives, the five nasal consonants, the three semi-vowels, viz. "y", "l" and "v", and the three fricatives, viz. "ś", "ṣ" and "s". And consequently, as the *Gautamī Śikṣā*² specifies them, there are 12 consonants that cannot be doubled, viz. the five breathed aspirated plosives, the five voiced aspirated plosives, "r" and "h".

Even in these *śaśa* and *śaśaśa* the doubling has been carried to fantastic extremes, I have not seen any instance in which medial "ś" has been doubled. The *śaśaśa* of the *Tejurveda* (Māhā office 2391) consistently doubles the fricatives *ś* and *ṣ*, but does not double the "s", although the rules of the *Śāntiśākhya*³ require the fricatives to be doubled except before plosives and vowels. The following are examples from this *śaśa*:-

śaśavataḥ

śaśavataḥśaśa

śaśa

śaśavataḥ

śaśavataḥ

śaśavataḥ

1. varṇa vimsati śekasā yeṣāṃ dvirbhāva iṣyate
prathamāntya trtiyāṃ yalavāḥ śaśasaiḥ saha. S'S p.457
2. atha sarveṣāṃ vyākṣanānāṃ dvirbhāvo bhavati
dvādaśākṣaravarjaṃ te kha cha ṭha thaphā
ghajhaḍhadhabhā rahayoś ceti. S'S p.450.

As regards the fricatives, the Varnaratna-dīpikā Śikṣā¹ remarks that the fricative "s" is doubled in only two Sanskrit words, viz., in śāssva and rāssva, and in no other word.

There is
~~I have~~ no doubt that as a general rule Sanskrit declension did not allow "s" to stand before another "s" within a word; it was either dropped or changed into the dental plosive "t", cf. asi, vatsyāni. And though grammatical rules allowed it to stand when it was final but preceded another "s" as in narassarvatra, the actual usage has been generally to drop the "s" even in this position and to change it into "h".

Again, even in those Mss. in which doubling has been carried to fantastic extremes, I have not ~~come across~~ ^{found} any instance in which medial "s" has been doubled: for instance, MS Yajurveda (India office 2391) consistently doubles the fricatives s and ś, but does not double the "s", although the rules of the Prātisākhya² require the fricatives to be doubled except before plosives and vowels. *The following are* ~~Let us give a few~~ examples from this MS:-

viśsvatah

addhvaressvidyah

asya

assvinah

amussya

sonasya

mātarissvam

manussyan

sūryyasya

1. S'S p.131 sakārasya dviruktir yā sā dvya^areva nānyatah, ā ca śāssvā ca rāssve yat sakāro'tra dviruktitaḥ.

2. According to the general rule, ^(cf. p. 196) ~~already~~ quoted that the first member of a consonant-group is doubled, when preceded by a vowel.

Hundreds of examples could be quoted regarding the non-duplication of "s" before a semi-vowel. Among the Gupta Inscriptions, I have ~~come across~~ ^{remarked} only a single inscription, No. 17, in which "s" has been doubled in Yassya, occurring five times therein. Now the question arises was the orthographic doubling of "s" avoided on phonetic grounds, or only for convenience' sake? I hold that it was avoided only for orthographical convenience, and that in actual pronunciation "s" in the group vowel + asya was doubled in Sanskrit, cf. Sanskrit asya = Prakrit assa; Sanskrit tasya = tassa; kasya = kassa. But then how is this view consistent with the aversion of Sanskrit to allow "s" before another "s" as in asi, vatsyāmi, vidvatsu? ~~In my opinion,~~ The reason why "s" in these examples could not stand before another "s" was due to the fact that the first "s" was presuffixal. It behaved something like a final and was therefore implosive. This particular "s" could not stand before any consonant without losing its aspiration, or being changed into "h":- cf. ^dvivadbhih, vidvatsu, candramahsu. The case of the medial "s" in asya was different. Even in Sanskrit the "s" of asya could be pronounced double without conflicting with the tendency to keep the presuffixal "s" implosive, "s" in the group vowel + s + semi-vowel was therefore actually pronounced double in Sanskrit and its doubling was avoided in orthographical transcription for convenience' sake, as the group sy, sv were very common in Sanskrit. When, therefore, the Varnaratnadīpikā Śikṣā states that Sanskrit has only two words in which "s" is double, i.e. can stand before another "s", it refers only to

'In asi and vidvatsu, the treatment of s may be a relic of parallel indg. sounds, cf. Wackernagel, p. 111.

presuffixal "s". Moreover, strictly speaking, this is not a case of doubling, but only two consonants of different syllables coming in conjunction with each other. And yet even their case was open to the question whether they were merely written double or actually pronounced double. Their exceptional orthographical treatment indicates that they were pronounced actually double in some dialects. As regards the fricative "h", the vast majority of Indian Grammarians are unanimous that it is not doubled¹. There is no doubt that orthographical evidence supports this view, for "h" has not been found written double in manuscripts or inscriptions. But it is hardly likely that the phonetic quantity of "h", especially as it was a voiced sound remained short in all Indian dialects in all positions. And a few exceptional cases were actually noticed by Indian Grammarians. Thus Uvata², commenting upon Rg. Prāt. VI.2. states that "h" like any fricative, can be optionally doubled, when it is not preceded by any sound or word and when it is a member of a consonant-group e g. Rgveda I.35.1 begins with the expression hváyāmyagnīm which could be optionally pronounced as h hváyāmyagnīm. With regard to "h" before "r" we find divergent views. Thus while according to Hārīta³ "h" was not doubled when it preceded "r", as in duduhre, ahrayah, it was doubled according to the Cārāyaṇīya Śikṣā⁴ which

1. Atharv. Prāt. III.31; Gautamī Śikṣā S'S p. 450, Māṇḍūkī Śikṣā S'S p. 473.

2. voṣmā samyukto'nupdhah

3. Taitt. Prāt. XIV.9 rephaparaśca hakaṛah.

4. harau yatra niyujyete hakaṛah kramate tadā,
ahhratam hhrīyate hhradini hhradam ca nidarsanam. Fol. 3.

illustrates ahhratam, hhriyate, hhrādinī, hhradan. ~~It~~ was ~~think~~ It was not unlikely that this divergence of views was based on actual dialectic variations. According to this Śikṣā and the Lomaśī¹ Śikṣā "h" is also doubled when it occurs between "r" and "y" as in etarhhyagniḥ. The Lomaśī Śikṣā says that "h" after "r" or after an Anusvāra or before "r" was doubled, e.g. barhhaḥ, sinhhaḥ, hhrādinī. As regards barrhaḥ and sinhhaḥ, ~~I think that the increased length of "h"~~ in these cases ~~might~~ ^{may} possibly have been due to the intensification of stress or tone on their respective syllables (of barhhaḥ mā'rahāḥ, rhāḥ (rhythm), but ~~I have not found any literary~~ ^{there seem to occur no} records of such doubling in Sanskrit. The increased length of initial "h" was possibly the transcription of the high tone so much generalized at the present day by some of the Northern dialects, though, in the absence of sufficient records, ~~I am not in a position to hazard a definite opinion on this~~ ^{it is impossible} point, especially because even mid-Indian records do not show any orthographical evidence of this tendency. Prākṛit often separates initial "hr" and medial "rh" by Svarabhakti, e.g. Skr. hrasva - Prākṛit rahasa - Skr. hrada - Prākṛit haraya, garhā - garahā, barha - bariha. According to the Lomaśī and the Cārāyaṇīya Śikṣās² "h" between "r" and "y" was doubled, as in etarhhyagniḥ; even here from the tendency of the language we expect a Svarabhakti, and not a doubling of "h", etarhya was likely to have been pronounced etarihya.

1. S'S p.462, rephapūrvō hakāraṣṭu rephātparam athāpivā, anusvārātparo yatra hakārah kramati triṣu.
2. raṇvubhayato yatra hakāro madhyataḥ sthitaḥ ubhayoh kram'anaṃ vidyādetar hhyagniḥ nidarsanam. Fol. 3.

Another interesting condition under which doubling was said not to occur has been mentioned by Pāṇini¹. He states that "in the opinion of all teachers doubling does not occur after a long vowel". This was a sound and important observation of the phonetic tendency of the language. For it is generally confirmed by literary Pāli and Prākṛit, which have shortened the quantity of the vowel before the corresponding double consonant when in Sanskrit there had been a long vowel before a consonant-group; while, on the other hand after a long vowel the double consonant has been reduced to single; cf. Pāli khajja = Skr. khādya; but Pāli sāsapa = Skr. sarsapa (through sassapa).

But if 'all teachers' implied that doubling never occurred after a long vowel in any dialect of the country, they were wrong; for (1) Sanskrit allowed intervocalic double consonants after long vowels, as in āttan, (2) in several Vedic Manuscripts, inscriptions and classical works doublings of the first member of the consonant-group after long vowels are often met with, c.f. for instance, the following examples from the above-mentioned Manuscripts:-

<u>tebbhyah</u>	<u>tīrtthyāya</u>	<u>mātrayā</u>
<u>tīrtthebbhyah.</u>	<u>śākkvararivate</u>	<u>indrāgnī</u>

1. VIII. 4. 52 dīrghād ācāryānām.

Rules of Doubling

According to Indian Grammarians, only that consonant was doubled which was the member of a consonant-group. No Indian Grammarian, except the Sarvasamanta Śikṣā and the Taitt. Prāt. (See above, the section on Intervocalic consonants) in a few individual cases, has prescribed the doubling of intervocalic consonants. Whether Indian dialects show any traces of intervocalic doubling has been discussed in the section on original doubling.

I now proceed to examine the detailed rules of doubling as prescribed by our Grammarians.

1. Vowel + consonant group.

This was the most general rule¹. After a vowel, the first member of a consonant-group was to be doubled. Thus mukta- became mukhta; santa-sappta; adya - addya; cakra- & caktra. Pāṇini², however, as already pointed out above, states that such doubling was optional, one could say santa-or sappta; cakra-or caktra-and so on. As I have already discussed above, the general tendency of the language as reflected in the living dialects proves that this doubling was decidedly predominant in the actual pronunciation of Sanskrit. ~~Pāṇini² however, as already pointed out above, states that such doubling was optional; one could say santa or sappta, cakra or caktra.~~

1. Bṛ Prāt. VI.1. svaṛānusvāraṇāpahito dvirucyate samyogādih. Taitt. Prāt. XIV.1. Atharv. Prāt. III.28. Vāj. Prāt. IV.100. Vyāsa Śikṣā; svaṛapūrvam iyād dvitaṃ vyañjanam vyañjane pare XI.1. Vārāratnadīpikā Śikṣā S'S p. 130. 2. VIII. 4. 47 anaci oa.

Pāṇini's option was therefore valid if it was orthographically allowed for convenience' sake. But if he meant to imply that both the pronunciations were equally current, he was wrong, as the opposite tendency for non-doubling (except when the second member of the group was a fricative after "r"), reflected in only a few dialectic examples like rāī for rātri-raana for ratna; ragani for aratni; puā for putra--- was rare. These examples indicate that Anusvāra did hinder the doubling.

II. Anusvāra + consonant group.

The Rg Prāt. and the Pāṇinīyā¹ state that after an Anusvāra, the first member of a consonant-group was doubled. It is interesting to note that both these works mention two alternative conditions that ought to precede a consonant-group before its first member is eligible for doubling. The preceding sound may be either a vowel or an Anusvāra. The Anusvāra was therefore not a merely nasalized vowel in the opinion of these authors, and they consequently seem to imply that an Anusvāra long syllable, as after a long vowel, the doubling of the first intervening between a vowel and a consonant-group did not hinder the doubling of its first member. I am afraid however, that the testimony of the living dialects does not confirm the observation of these Grammarians. For in Prākṛit whenever an Anusvāra has appeared before the corresponding original Sanskrit group, we do not find any traces of doubling, but in the absence

1. Rg Prāt. VI.1. svarānusvāroḥahito dvirucyate saṃyogādih.
 Pāṇinīyā, Chapter on doubling:- hrasvādanusvāra iyād dvivarnam.
yoge pare tasya ca mātrikaḥ syāt. yogādirapyutra tathā
dvirucyate 'nusvārapūrvō' pyatha cāgamah syāt. 162.

of Anusvāra the doubling is maintained, cf. for instance,

Sanskrit

Prākṛit

darśana-

daršana- or dassana-

pakṣī

pankhi or pakkhi

plakṣa-

pilankhu- or pilakkhu-

tejasvin

tejansi or tejassi

These examples indicate that Anusvāra did hinder the doubling. It may be objected on behalf of our Indian Grammarians that doublings in words like pankhi ^{may} ~~might~~ have been orthographically avoided, but that it does not necessarily prove that they were phonetically absent. ^{It is more probable} ~~I think~~, however, that in pronouncing pankhi or Sanskrit varḍya the quantity of the original double consonant was ~~very probably~~ affected by the intervention of Anusvāra in the same syllable. The syllabic quantity of the vowel to which the Anusvāra belonged was long, and after a long syllable, as after a long vowel, the doubling of the first member of the consonant-group was very probably avoided, as the quantity of the double-consonant succeeding a long syllable and followed by another consonant was likely to have been reduced, cf. Skr. agni- = dialectic aggi- or āg-. If, however, the dialects observed by these Grammarians had an extraordinarily strong tendency for doubling, then the original long quantity of the consonant ^{may} ~~might~~ have been considerably preserved in spite of the intervention of the Anusvāra. That

That

That the existence of such dialects was not improbable may be indicated by double consonants after anusvāra sometimes occurring in Prākṛit, cf. Śakuntalā, mahamte in Dravidian MSS of Prākṛit works.¹ The phenomenon may be noticed even in a few Skr. inscriptions, e.g., vedamta (Epi. Ind. VI, 109), gamaṣadi (Ibid. VI, 348), tesam mmaya (Ibid. V, 127, 130). Even in several modern Indian dialects (except many of the N.W. and Singhalese) Skr. short vowel + nasal + plosive is represented by long vowel * nasal^{fixed} + plosive, and so indicates that among certain dialects of the original language, consonants were pronounced double after the anusvāra, cf. Skr. kaṇṭaka -> Hindi Marāṭhī kāṭa, but Singh. kaṭu, Sind. kando, L. Pūnj. kanda.²

~~The lengthening of the quantity of the Anusvāra before another consonant or consonant-group was not unlikely in some of the Indian Dialects, cf. how nasality by progressive assimilation has attacked the succeeding plosive~~

¹ Pischel, p.192.

²Cf. Bloch, pp.82, 83; Turner, Bull. School of

Or. Stu. pp. 312, 313, Geiger, Litt. und Sprache d. Sing. pp.42, 43.

² Cf. footnote on p. 197.

But a still more surprising rule comes from the Vyāsa¹ Śikṣā and the Pāriśikṣā.² According to these authorities, not only is the first member of a consonant-group doubled after the Anusvāra, the Anusvāra itself is also doubled after a short vowel before the consonant-group in question. ^{It will be} ~~I have~~ shown in the ^{9th} Chapter (on the Anusvāra) that in the opinion of the Taittiriya school of phonetics, to which these Śikṣās belong, the Anusvāra was a consonant, being equivalent to half "g", consequently pronounced like "ṅ", and ^{it will be} ~~I have~~ also pointed out that this view was based on facts. ^(cf. H. 2476.) If, therefore, the Anusvāra in the pronunciation noticed by these Śikṣās was a consonant, it became the first member of a consonant-group, and hence was subject to duplication according to the general tendency of the language. ^{probable} ~~I therefore think that~~ The lengthening of the quantity of the Anusvāra before another consonant or consonant-group was not unlikely in some of the Indian Dialects, cf. how nasality by progressive assimilation has attacked the succeeding plosive in Prākṛit paṇṇa or Lahndi pañ for Sanskrit pañe, ^{*} Panjabi jamu for jambu, Hindi amā for ambā.

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1. hrasvād dvitvam anusvārah prāpnuyāt samyute pare
tadanusvārapurvasca samyogādīr dvirucyate. XVIII. 5, 6.

² Cf. footnote on p. 197.

III. "r" + consonant.

The Pratiśākhya² give a general rule that a consonant after "r" is doubled. Pāṇini, as usual, optionally allows this doubling. I have simply illustrated in the above pages the tendency of the living dialects and the Gupta inscriptions to omit the doubling of the consonant after "r". The grammarians have noted an important exception in the case of "r" + fricative, which is followed by a vowel. This is the case of "r" + fricative, which is followed by a vowel. Thus the Prakrit word for sanskṛite is sakkade; the Anusvāra before this doubled consonant, instead of being lengthened, has entirely disappeared; while whenever Prakrit has preserved the original Sanskrit Anusvāra, doubling has not occurred after it, cf. Prakrit visamthula-Skr. visamsthula. Svarabhakti, e.g. Sanskrit yaṅga-has become varisa; though yaṅga-also occurs in a minority of cases. But when in the

It would be of interest to note in this connection the ^{probable} more correct observation of the VĀj. Prāt. (IV. 109) which explicitly states that the Anusvāra before a consonant-group is not doubled.

preserved the doubling, e.g. yaṅga = Skr. yaṅga yaṅga = Skr. yaṅga yaṅga = Skr. yaṅga

1. RgV Prāt. VI.2 ; Taitt. Prāt. XIV.3; VĀj. Prāt. IV, 101; Atharv. Prāt. III.31. Pāṇ. VIII.4.46.
2. RgV Prāt. VI.2; Taitt. Prāt. XIV. 26; Atharv. III.33.

III. "r" + consonant.

The Prātiśākhya¹ give a general rule that a consonant after "r" is doubled. Pāṇini, as usual, optionally allows this doubling. I have amply illustrated in the above pages that the tendency of the living dialects and the Gupta Inscriptions confirm the doubling of the consonant after "r".

The grammarians² have noted an important exception in the case of "r" + fricative when followed by a vowel. Thus the fricative in varṣa will not be doubled, but in varṣaya it will be doubled. This observation, I believe was based on an important phonetic fact in the language, for when a vowel followed this group in the original Sanskrit form, the corresponding Prākṛit form, in most cases, has given the Svarabhakti, e.g. Sanskrit varṣa has become varisa, though vassa also occurs in a minority of cases. But when in the original Sanskrit word the group "r" + fricative (except the voiced fricative "h", which, according to Indian Grammarians, was not doubled) was not followed by a vowel, Prākṛit invariably preserved the doubling, e.g. varissa = Skr. varṣaya, karissa = Skr. karṣaya, harissa = Skr. harṣaya.

1. Ṛg Prāt. VI.2 ; Taitt Prāt. XIV.4; Vāj. Prāt. IV, 101; Atharv. Prāt. III.31. Pāṇ. VIII.4.46.

2. Ṛg Prāt. VI.2; Taitt. Prāt. XIV. 16; Atharv. III.32.

Vāj. Prāt. IV. 102

IV "l" + plosive

As regards the group "l" + plosive, the Grammarians have given divergent views, though the majority of them, prescribe the doubling of the plosive in this case. The Taitt. Prāt. 1 does not prescribe this doubling, except in the case of "l" + aspirated consonant, as in pragalbbhā; but quotes the authority of Pauṣkarasādi who maintained the doubling of "l" or of the plosive optionally. The same work quotes the opinion of other teachers who prescribed the doubling only of the plosive. And I hold that the evidence of Prākṛit and Manuscripts confirms the theory that maintained the doubling of the plosive after "l". Thus Sanskrit l + p = Prākṛit pp, e.g. jalpati = jappati, kalpanā = kappanā. Prākṛit does not give the doubling only in that case when a nasal "m" or Anusvāra has been substituted for "l", cf. Prākṛit jampai = Skr. jalpati. The doubling of the plosive after "l" has been sometimes met with in Sanskrit manuscripts, although I have not come across it in the Gupta inscriptions. ~~Let me~~ ^{The following} are ~~some~~ ^{are} examples from a Ms. of the White Yajurveda (No. 2391 India Office) :-

vviṣvagulkkahabhikalppamānākilbbisātkalppantāmulbbam

1. XIV 2,3,7 lavakārapūrvah sparsasā pauṣkarasādeḥ,
sparsa evaikeṣām ācāryānām lakārapūrveca.

Vaj. Prāt. IV. 102 śamāntābhyasāsparsah .

V. Plosive + plosive

In accordance with the general rule of the Prātisākhya a plosive after a vowel would be doubled before another plosive, and I have given several examples from Manuscripts in the above pages that confirm this view. But as I have also pointed out above, the doubling of a final plosive + plosive, among the majority of areas speaking colloquial Sanskrit, was more orthographical than phonetic, as the living dialects and the general tendency of the language indicate doubling only when a medial plosive is followed by another plosive. On the other hand, the Taitt. Prāt.¹ mentions the opinion of some authorities according to whom a plosive before another plosive is not doubled in any position, and the commentary Vaidikābharana explains it by stating that according to these authorities a plosive before another plosive is not heard. In the opinion of these Grammarians, then, the doubling of a plosive before another plosive did not occur. As ~~I have~~ already discussed above, ~~there is~~ ^{no} ~~any~~ copious evidence from the living dialects in favour of this non-doubling. But even this opinion indicates that these authorities had observed another living and probably a more predominant phonetic phenomenon, viz. the Abhinidhāna of a plosive before another plosive. (cf. H. 227 ff.).

1. XIV. 27 sparsaḥ sparsāparah; paraspareṇa samyogaḥ sparsānām
tu bhaved yadi, tatpūrvasya śrutir nāsti prāhuḥ teṣāṃ idaṃ matam.

It may be objected here that the rule regarding the doubling of a plosive before another plosive, though enjoined by Grammarians and confirmed by inscriptions and manuscripts, is not corroborated by the living dialects, where, as in natta- (nakta-) (santa-) ~~seatta-~~ it is not the first, but the second plosive that seems to have been doubled. But a little reflection will show that the apparent doubling of the second plosive in Prakrit is in reality the effect of a two-fold process (1) doubling of the first plosive (nakk, sapp), (2) its assimilation to the second plosive due to Abhinidhāna. Otherwise it is hardly likely that nakta- became natta- through the process nak-tta, for Indo-Aryan shows no tendency for doubling the initial consonant of a syllable.

The doubling of Skr. inscriptions and MSS, was therefore the actual pioneer of Prakrit doubling, as Jacobi has rightly pointed out.¹

1. K.Z. Vol.25, p.609.

The following are

with in manuscripts.

1. IV. 102
2. apāraṇḍa paṇḍa apāraṇḍa paṇḍa apāraṇḍa paṇḍa
3. paṇḍa paṇḍa paṇḍa paṇḍa paṇḍa paṇḍa
4. paṇḍa paṇḍa paṇḍa paṇḍa paṇḍa paṇḍa

Thus when Sanskrit sapta became Prākṛit satta, Sanskrit śabda Prākṛit sadda, there was Abhinidhāna first and doubling afterwards, and in this particular sense the first plosive was not heard.

VI. fricative + consonant

The Vāj. Prāt.¹ prescribes the doubling of a consonant after a fricative, e.g. haste will become hastte, sparsa- = sparsa- yah kāmayeta = yah kkāmayeta, grīma- = grīmma-. As regards fricative + nasal consonant, however, our authorities differ. According to the Taitt. Prāt.² an additional consonant was inserted in the group, but the consonant inserted was not a nasal consonant. The inserted consonant was the breathed unaspirated plosive of the class to which the nasal consonant belonged.

Thus grīma- became grīmma-, asma- = asmaⁿ-, krana- = kratnaⁿ-.

In other words, in the opinion of this authority the first element of the doubled group was denasalized. According to Plākṣi³ only a breathed plosive after the fricative was doubled;

thus there was doubling in niškevalyaⁿ, but not in brahmaⁿ.

In the opinion of Plākṣāyana⁴, however, only nasal consonants in this group could be doubled, and not plosives. According to this authority, then, there was doubling in akṣṇavāⁿ, brahmaⁿ, but not in niškevalya-.

~~Let me now examine the validity of these views.~~ As regards the plosive after fricative, its doubling has often been met

with in Manuscripts. *The following are* ~~Let me quote a few examples from two MSS.~~

1. IV.102 2. aghośādūṣmanah parah sparsaparāt tasya sasthānah.
XIV. 9.
3. Taitt. Prāt. XIV. 10. aghoṣe plākṣe.
4. Ibid. uttamaparāt tu plākṣāyanasye.

of the White Yajurveda (British Museum 5350 and India Office 2391):-

<u>tastthuh</u>	<u>ghanasppati-</u>	<u>yuñjānah porathamam</u>
<u>traisttubhena</u>	<u>sttokānām</u>	<u>savituh nprasave</u>
<u>tastthusah</u>	<u>srsttah</u>	<u>visnoh kkramosi</u>
	<u>manasasttristtub-</u>	
	<u>graismmi</u>	

Prākṛit also manifests similar doubling of the plosive after the fricative, as the following examples will show:-

Prākṛit	Sanskrit	Prākṛit	Sanskrit
<u>nikkha-</u>	<u>niska-</u>	<u>hattha-</u>	<u>haste-</u>
<u>pukkhara-</u>	<u>puskara-</u>	<u>atthi</u>	<u>asti</u>
<u>agnitthoma-</u>	<u>agnistoma-</u>	<u>puppha-</u>	<u>puspa-</u>
<u>ditthi-</u>	<u>drsti-</u>	<u>āphodana-</u>	<u>āspnotana-</u>

But the striking proof of this doubling tendency in the language is given by the following examples from the living dialects, in which the doubling of the plosive had been so predominant that the aspiration of the preceding fricative has been entirely driven out:-

Prākṛit	Sanskrit	Prākṛit	Sanskrit
<u>sukka-</u>	<u>suska-</u>	<u>mitta-or mittha</u>	<u>mista-</u>
dukkara	dukkara	<u>bappa-or bappha-</u>	<u>bāspa-</u>
pasappa	pasappa	antakharana	antakharana
<u>katta or kattha-</u>	<u>kaṣṭa-</u>	antapasa	antakṣata

The above examples then, do not confirm Plākṣāyana's view that plosives could not be doubled after the fricative.

As regards the nasal consonants after fricatives, their doubling has often been met with in Manuscripts. *The following are*

a few examples from the same MSS :-

1. JMS for 1907.
2. JMS for 1908.

asmintasmaiasmanabbhyambrahmanrasmaisvasmannebrahmana

Traces of this doubling of the nasal consonant may be noticed in Jaina Māgadhī, e.g. ninneha for nisneha; tanmi = Skr. tasmin; eamni, eyamni = Skr. esmin. But divergent tendencies, in which the nasal consonant has not been doubled, are also met with in some dialects of Prākṛit, cf. Ardhamāgadhī and Śaurasenī assin = asmin; bhasa = bhasan. These examples offer us some grounds to suppose that Plākṣī, who did not favour the doubling of voiced consonants after fricatives was referring to a geographical area to which Ardhamāgadhī and Śaurasenī belonged.

But the most remarkable observation regarding the treatment of a consonant after a fricative is that which we find in the Taitt. Prāt. This work prescribes the insertion of a breathed un-aspirated plosive in the group fricative + consonant, so that this insertion could occur even if the consonant was a nasal consonant. Thus grīma was to be pronounced grīpma; asman aspmā; Arana = Kṛstna; Viṣṇu = Viṣṭnu. ~~In my opinion~~ This observation of the Taitt. Prāt. throws a definite light on a moot point in the Philology of Indian dialects. It has come to the notice of several scholars that Viṭṭhala and Kiṭṭa (or Kriṣṭa) correspond to Sanskrit Viṣṇu and Arana respectively. Thus Fleet¹ discovered an inscription dated 1224 A.D. which presents the name of the prince Viṣṇuvardhana in the forms Bittideva and Bittiga. Again, Sir George Grierson² has pointed out that "In Bengali every

1. JRAS for 1907.

2. JRAS for 1908.

an is pronounced at at the present day. Everyone, even a pandit, pronounces Viṣṇu as Biṣṭu, Vaiṣṇava as Boiṣṭōm, and Kṛṣṇa as Kiṣṭo". In Marāṭhī and Canarese, persons who bear the name 'Viṣṇu' are colloquially addressed as 'Viṭṭhala'. In Canarese, persons bearing the name 'Kṛṣṇa' are addressed as Kiṭṭa¹. But in spite of these data, modern scholars have been unable to demonstrate the phonetic connection between Viṣṇu and Viṭṭha. Thus M. Bloch² states in this connection that "there is no phonetic connection between Vetha-Viṭṭha and Viṣṇu. The normal representative of Viṣṇu in Marāṭhī is Vinū". ~~It is of opinion,~~ ~~however, that~~ ^{however,} This phonetic connection can be explained in the light of the general tendency pointed out by the Taitt. Prāt. in the above prescription, and confirmed by certain Aśokan inscriptions and several additional examples from Prākṛit. For if in certain dialects Viṣṇu was pronounced Viṣṭnu, and Kṛṣṇa as Kṛṣṭna, the next stages Viṭṭha and Kiṭṭha are easily explicable as being due to assimilation and dissimilation. That the tendency in question was general in some of the leading dialects in India is confirmed not only by examples from the treatment of the Sanskrit group an, but also by the treatment of the Sanskrit groups am and am which have become ph i.e. p-ph in the Magadhean dialects of Aśokan inscriptions. Thus in the Dhauli and Jaugadīa recensions of Aśokan edicts the consonant-group am or am in the personal pronouns (Plural) asmad and yusmad is represented by ph.

1. Thus a Canarese friend of mine, Mr. Kṛṣṇa Iyenger, tells me his people always address him (and all people bearing the name 'Kṛṣṇa') as 'Kiṭṭa'.

2. La formation de ^{la langue} Marathe (Index).

i.e. ppha. ~~Let me give below the declension of these pronouns~~
~~= occur~~ in the above-mentioned inscriptions¹:-

asmad- (Plural), as may be illustrated by Jusmad- (Plural)

Nom. maye ('we'), Prākṛit, however, Nom. tuphe

Accus. aphe, apheni Acc. tuphe, tupheni

Gen. aphāka, aphākā, ne Ins. tuphehi

Loc. aphesu, aphesū Gen. tuphāka

Loc. tuphesu

Some of these forms have also been met with in the Asokan inscriptions at Rūpanātha and Sāranātha, where ^{may be} ~~I have~~ noticed

tupaka, tupāka and tuphe. Now is there no phonetic connection

between asmad- and aphe, Viṣṇu and Vitṭha? In my opinion it is here

that Taitt. Prāt.'s suggestive observation comes to the philologist's

help, asmad- according to our Prāt. became apma (although not

orthographically so written,) which further changed into appha,

and I believe that the consonant ph in these pronominal forms

was really a double consonant, though written only single, as

has been often met with in Asokan inscriptions. That even the

personal pronouns underwent this phonetic change shows the

frequency and the wideness of the general tendency in question

occurring in the imperial dialects of Magadha.

Traces of this tendency have also been met with here and there

in Prākṛit. Thus, as Pischel has pointed out (p.185), some

Prākṛit dialects have bappa-for bhasman, bhippa-for bhisman-

sepha-for slegman. The Abhidhāna Rājendra² quotes a passage

1. Hultzsch: The Inscriptions of Asoka: 1925.

2. "kominṇagare tatthanam turumṇim bhipphayasuyamkarayala"

from the Jñātādharmakathā Sūtra which represents King Bhīṣmaka as Bhipphaya. Singhalese has also inherited a few products of this tendency, as may be illustrated by the pronominal forms topa, api ('we'). Prākṛit, however, betrays only a few relics of the tendency, which was probably present in a more general form much earlier. There are grounds, therefore for the supposition that the chronological and geographical data to which this prescription of the Taitt. Prāt. refers may be traced back to the period of Aśoka, if not earlier, and to the dialects particularly connected with the languages spoken in the central area of the Magadha Empire.

of a word, in a compound-group or after an anvaya, otherwise it was to be pronounced as g. But y remained a semi-vowel in the initial syllable of a word when it was preceded by a prefix, as in the word yigra.

y in ya and yaḥ (both enclitic pronouns) and in the particles ya and yaḥ and in similar words signifying "option" was to be pronounced with only a slight obstruction of the mouth-passage.

y was to be optionally pronounced as a semi-vowel (under the above conditions), and after the word "or".

y was said to be of three kinds, "heavy", "light" and "very light". In the beginning of a word y was heavy, in the interior, slightly light, and at the end, very light. Similarly g, ṅ or ṇ was heavy when alone or preceded by a prefix was said to be light, but it was optionally a semi-vowel after the words api, ya, va, vaḥ, vaḥ.

CHAPTER VI_xThe pronunciation of γ and y in different positions_x

Several Śikṣās and the Pratiśāhā Sūtra give interesting directions regarding the pronunciation of the orthographic γ and y in different positions.

Thus according to the Yājñavalkya Śikṣā, y was to be pronounced as j in the beginning of a hemistich, in the beginning of a word, in a consonant-group or after an avagraha, otherwise it was to be pronounced as γ . But γ remained a semi-vowel in the initial syllable of a word when it was preceded by a prefix, as in the word vidyut.

y in ya and yā (both enclitic pronouns) and in the particles yā and yai and in similar words signifying "option" was to be pronounced with only a slight obstruction of the mouth-passage.

γ was to be optionally pronounced as a semi-vowel (under the above conditions), and after the word "na".

y was said to be of three kinds, "heavy": the gloss explains it as "pronounced with great obstruction", "light" and "very light". In the beginning of a word γ was heavy, in the interior, slightly light, and at the end, very light. Similarly γ , γ or y when arising from Sandhi or preceded by a prefix was said to be light; but it was optionally a semi-vowel after the words atha, mā, gā, and na.

γ and y when preceded by a nasal consonant in the same word were said to be heavy, although when products of Sandhi they were light. γ when combined with h or ṛ, or followed by ṛ, was heavy, but not if it was combined with any other

sound.¹ According to the Laghu^A Amoghānandinī Śikṣā ṣ in the former case (i.e. when combined with ṣ or ḥ), was pronounced as ṣ in the texts of the Mādhyandina School; thus bāhyaṣ was pronounced bāhjaṣ, sūryaṣ was pronounced sūrijaṣ. ṣ when followed by ṣ was said to be always pronounced ṣ, e.g. vṛddhiṣ was pronounced vṛddhiṣ. After prefixes generally, however, the pronunciation of ṣ as ṣ was said not to occur, e.g. ṣ in upayaṣṣāt was not to be pronounced ṣ (upajaṣṣāt), though simple yaṣṣāt was pronounced jaṣṣāt. Even here there was an exception mentioned by the Keśavī Śikṣā (S' S p. 150), viz. after the prefix sa-, ṣ and ṣ were to be pronounced as heavy. Thus saṣvaṣāmi was to be pronounced saṣvaṣāmi, saṣvarcase as saṣvarcase, saṣyaumi as saṣyyaumi, saṣyajāpatiṣ as saṣyyajāpatiṣ.

The Laghu^A Amoghānandinī Śikṣā points out in this connection that the pronunciation of the orthographic ṣ as ṣ was maintained in all Schools but the Vājasaneyīns. It states that

1. Yājñavalkya Śikṣā, verses 150 ff.:-

padādan oa padādan oa saṣyogāvagraheṣu oa
jaṣ śabda iti viṣṣeṣo yo'nyah sa ya iti saṣṭap.
upasaṣgaparo yaṣtu padādirapi drayate
īṣatsṣṣṣto yathā vidyut padaschedāt paraṣ bhavet.
tvedarthavācīnau vo vā vā vai yadi nipātejan
ādenāṣa vikalpārthā īṣatsṣṣṣā iti saṣṭap.
viṣṣapayā yakārah ayāt tathā neti padāt paraṣ
bhavatītyapi pūrvaiya tathā oa saṣadāṣ api.
yadeva lakṣaṣaṣ yaṣya yakāraṣyāpi tad bhavet. etc.

cf. Parāśarī Śikṣā 80-83, Laghu^A Amoghānandinī S' 1-5,

Padyātmikā S' 1-5, Nārada S' 16-18, Keśavī S' Sūtras 1-3,

Pratijñā Sūtra II. 1, Amoghānandinī S' 25-27.

although the orthographic reading of y was the same in both cases (when it was to be pronounced as y, and when it was to be pronounced as j), yet when a reading like yajñāt occurred, it was to be pronounced as yyajñāt, i.e., with a heavy sound in the beginning of the word.¹

The Prātiśākhya pradīpa Śikṣā² states in this connection that y was not pronounced as j when it did not begin a word; thus ayajanta was not to be pronounced ajajanta. Nor did this pronunciation occur when y was combined with another consonant, as in aminyajā. It occurred, however, even at the end of a word, when the y was doubled, e.g. npāyyā, dhāyyā, jarāyyā^{u-} were said to be respectively pronounced npājja, dhājja, jarājja^{u-}.

The Kośavī Śikṣā (SB, p.138) states that the initial and therefore heavy y and y should be pronounced double y and double y; thus vāyāvātha should be pronounced vvāyāvātha, vāsoḥ pavītraṁ asi as vvāsoḥ pavītraṁasi, yājanānāya as yyājanānāya. In the next Sūtra the same Śikṣā implies that this doubled y was to be pronounced as j.³

The phenomenon that the final y and y were to be pronounced with only a slight effort was observed by authorities even earlier than Pāṇini,⁴ for he attributes this opinion to Śakṣya-Yana, who is also cited by the Atharv. Prāt. in this connection.⁵

1. yat kṛtaṁ sūtrakāreṇa tadvat syāt saṁprasāraṇaṁ, taḥ jñeyam sarvasūkhīṣu na tu vājasaneyināṁ. lakṣaṇasya virodhe'pi pāṇikṛtā yadi dṛṣyate, tat tathā pratipattavyam yyajñāyaj-
~nāva ityatha. 13-14.

2. SB, p. 297.

3. SB, pp. 138, ff.

4. VIII.3.16. vyor laghuprayatnataraḥ śakṣyānāya.

5. II.24.

But the Śikṣā have gone further, for they point out that ṣ and ṣ even in the interior of a word were to be pronounced with only a slight effort. This phenomenon was noticed in Prākṛit by Hemacandra, who in his Prākṛit Grammar¹ points out that ṣ (the result of the elision of a consonant) should be pronounced with a very slight effort (laghuprayatnataraḥ), provided that it is preceded and followed by a or ā, as in nayanāṣ, dayāṣ. But if an a or ā does not follow, even this light ṣ will be dropped, as vāṣ-for vāṣ. Moreover, this light ṣ was to be pronounced only after an a or ā. Thus the ṣ was not to be pronounced in dearṣ.

In the beginning of a word, however, both Hemacandra (Prākṛit Grammar I.245) and Vararuci (II.31) state that Sanskrit ṣ became j in Prākṛit, and they illustrate jaṣ, jaṣṭhi, jakṣa-for yaṣa, yaṣṭhi and yakṣa respectively. But in the interior of a word, according to these authors, ṣ did not become j, e.g. in avaṣa. Hemacandra notices this j even after the prefixes sa and ava, as saṣṭa, avaṣa, though perhaps he did not notice the wider use of j after sa as the Keśavī Śikṣā did. He also notices that the ṣ of the final verbal suffixes anīṣa, īṣa and tīṣa was optionally pronounced j, as uttariṣa-uttariṣa, karaniṣa-karaniṣa.

The general accuracy of the above observations will be acknowledged, as the facts thus described have been borne out by the development of Sanskrit into the middle and modern Indian languages (cf. Pischel pp.176, 8). In addition to the evidence afforded by Pischel's investigations, the above remark of the Keśavī Śikṣā about the heavy pronunciation of ṣ after

1. I.180. avarṣāt paro laghuprayatnataraṣakāradrutir bhavati.

ga is supported by spellings in the Pallava Grant Inscription¹, e.g. saṃjutto side by side with ppayutte (= prayukta). It is also confirmed by the practice of literary Prākṛit, e.g. saṃjananti (= saṃyacchanti), saṃjocapara, etc.²

The Śikṣā and the Pratijñā Sūtra definitely lay down that this particular pronunciation of y and ṡ was confined to the Mādhyaṇḍina school, the geographical position of which was North India west of Prayāga, - the country known as Mādhyaḍeśa.³ It is a significant fact that the change of initial y into j has not occurred in Māgadhi, which was confined to Eastern countries. In Māgadhi, according to Grammarians,⁴ not only does the initial Sanskrit y remain unchanged, e.g. yadi remains yadi, yathā = yadhā, but quite the opposite change has taken place, viz. Sanskrit initial j has become y, e.g. in Māgadhi jānāti has become yānāti; jātaḥ - yātaḥ, ^{although ever here I may have been a mistake (cf. Chatterji p. 85).} But when we come to that branch of Prākṛit which is par excellence the dialect of Mādhyaḍeśa, viz. Śauraseni,⁵ we find the pronunciation in question quite universal.

As regards the pronunciation of y, the Śikṣā prescribe similar rules, - that in the initial position it should be pronounced ^{as} heavy, in the interior of a word as light, and at the end as very light.

According to the Pārāsari Śikṣā, the y which is the product of Sanskrit of ay and ā was also very light, as in the phrase agnāvāgni.⁶

1. Epigraphia Indica Vol. I, p. 3.

2. cf. Index of words in the Karpūra mañjarī (Sten Konow's Edition.).

3. SS. p. 188, Pratijñā Sūtra, I-3. Weber: Indische Studien IV-72.

4. A. C. Woolner: Introduction to Prākṛit, p. 10.

5. A. C. Woolner: Ibid., p. 6.

6. aṅkāraṇte pade pūrve akāre parataḥ aṅhite laghūterap vijānīyād agnāvāgnīśeti nidarśanam. 63.

And again, γ or γ between two short vowels, in the Matras, was said to be not only very light, it was also short, as in the ^{word} abhiyudhya, the intervocalic sonant γ was short.¹

This view of the Pārāsarī Śikṣā, that γ between vowels, or the γ which was the product of Sandhi was very light, was based on accurate observation of phonetic changes in Vedic Sanskrit, and of the actual pronunciation of the sounds in the dialects, as in the former the γ which was the product of Sandhi was subject to elision, while in the later dialects it tended to disappear altogether between vowels.

In this connection the remark of Brugmann² that the Sanskrit γ became labio-dental in the historical period requires modification. For at least a thousand years before Brugmann Indian Grammarians had observed, and correctly, that the Sanskrit γ in the medial and final positions was not a labio-dental. In this connection Hemacandra³ gives an interesting example, illustrating the change which the Sanskrit medial β has undergone, viz. from a labial plosive to a labio-dental or a semi-vowel, which subsequently disappeared, e.g. Sanskrit alāḇu- = Prakrit alāvu- = later alāu-.

But in the initial position Sanskrit γ has not only maintained its consonantal position, it has in several cases become a regular plosive consonant. It is in view of this that the Amoghānandinī Śikṣā takes pains to enumerate a list of words with the initial labial β , and another list with the initial labio-dental γ . Thus it gives 103 words with an initial β , such as:- brahmaⁿ-, bāhu-, brhad-, bodhaya-, brūte-, bandhu-, bahula-, bādha-, bibharṣi-. It definitely specifies

1. Ādyantahrasvayor mantre vakāro yatra drāyate, sa tu hraṣva iti prokto (a)bhīyudhyeti nidarśanam. Ibid. 81.

2. Grundriss, 2nd Edition, Vol. I, p.302.

3. I. 237.

that b in ipubalābala was always a labial plosive, and was not pronounced optionally as a labio-dental. It gives a list of 48 words with the initial y which it expressly specifies as being (labio-)dental, some of which may be mentioned:-

viṣṇu-, vīṣu-, vahni-, varuṇa-, vaṣṭ, veda-. It enumerates a number of words such as kuvalaṣ, valaṣ, vivalaṣ, which can be optionally pronounced as labio-dental.¹

Probably in view of a similar confusion of y and b, the whole of the Māṇḍavī Śikṣā² is exclusively devoted to the enumeration of 641 words in the Yajurveda containing the labial plosive b.

It is now well-known that this change of initial y into b has occurred in several modern dialects and has been noticed even in the inscriptions of ~~Aśoka~~. But the phenomenon has occurred even in the classical Sanskrit inscriptions of the Gupta period.³ Thus

(a) Inscriptions No. 55 and No. 56 and several others, double the initial y after the prefix saṃ; thus we have saṃvrat-saṃvratāśāśane. No. 68 has saṃvrat.

(b) The Khoh inscription has barṣa-instead of varṣa, and saṃvatsara instead of saṃvatsara, but in the medial position we have y for b in several cases; thus in the Gupta Inscriptions Nos. 51, 79 and 80 we have lavṛṣa-instead of labṛṣa. Inscription No. 22 reads lanvoṣṭha-instead of lanboṣṭha.

Equally remarkable and accurate is the Yājñavalkya Śikṣā's observation that the y of the enclitic pronouns vaḥ and vān and of the particles vai and vā was light, i.e. semi-vocalic, for these enclitics, being unstressed, were not pronounced

1. SS p. 94. bibhargi bibhargyastve saṃhitāyān kramena tu, etc
oṣṭhyān samāhṛtān sēṣā dantyaṇ prakīrtitān.

2. SS. p. 72.

3. Fleet's Gupta Inscriptions.

with so much obstruction and effort. It was probably owing to the obscure impression left on the hearer by their "light" pronunciation that the enclitic pronouns yo and vā of Sanskrit were for the most part eliminated by Prakrit, which generalized tuhya-forms instead. Thus although in Pāli we find yo side by side with tuhāka and tuhya, in Prakrit we generally find tuhāya etc., although in Kāśadhī and Śaurasenī we occasionally ^{find} come across yo (Pischel p. 398).

As regards the Yājñavalkya Sīkṣā's observation that y when combined with h and ṛ was consonantal, we do not find any distinct evidence of this in Pāli, which still preserves bāhya for Sanskrit bāhya and gāhya for Sanskrit grāhya (Childers) - the y remaining unchanged. But in Prakrit we do find that ṛ in combination with h or ṛ has become i. Thus, as Hemacandra¹ has pointed out, Sanskrit grāhya has become gaiha, Sanskrit ārya has become aiṛi or aiṛa.

Conclusion.

Indian Grammarians, then, have accurately observed the phonetic change which Skr. semi-vowels have undergone in various positions. In this connection two questions will naturally arise:- (1) How far does this change fit in with the general tendency of Indo-Aryan dialects? (2) How far can it be phonetically explained?

(1) This change is a part of the general tendency of Indo-Aryan dialects to maintain plosion of consonants in the initial position and to reduce their plosion in the medial and final positions. Thus Hemacandra noticed the well-known fact (Prākṛit Grammar I-177) that in the medial and final positions Sanskrit plosives are generally dropped, e.g. Skr. loka- = Prakrit loḍi naga- = naḍi etc.

This tendency has been general, although some dialects in the North and the West have maintained the old pronunciation, e.g. Kashmiri has still yih, yogi, yod and yot^u for Sanskrit ya^d, yogya, yuddha and yatra, and it still pronounces yāt for vartman; wāh for vinśati-, while Marathi, Rajasthani and Singhalese have also followed the general tendency by changing initial y into j; e.g. jō and jan for Sanskrit ya^d and yava-. As regards y, it is the Eastern dialects, viz. Hindi, Behari, Bengli^a and Oriya^u, which have developed the initial y of Sanskrit into b; while the Western dialects, viz. Sindhi, Lahndi, Gujarati and Marathi have kept up the y, of. Sanskrit yanay = Sindhi wapu = Hindi ban. Sanskrit vinśati - Lahndi vin^h, Hindi bis.

- 2) Professor Meillet has pointed out in this connection¹ that the plosion of intervocalic consonants in various languages has been gradually reduced, except, as in Slavonic and Italian, where syllables are isolated from one another. What, then, is the phonetic explanation of this phenomenon? It may perhaps be attributed to the fact that it is easier to maintain the stronger breath-force for a plosive in the initial than in the succeeding positions. In the majority of cases it has been found easier to pronounce ava than aba, because in the latter case the transition from one vowel to another would be more abrupt. This is, in fact a stronger case of the assimilation of intervocalic consonants to vowels, for intervocalic breathed consonants have also undergone a change in several languages, of. Sanskrit īakat + īāvara = īagadīāvara. If the vowel's force of assimilation has vocalised breathed consonants, it has further changed voiced consonants into semi-vowels.

1. I P. Vol. 31.

Chapter VII.

The tendency to maintain and intensify plosion in the initial position can be further illustrated from child language. Thus the Pūnjabi child says chap instead of sap (serpent) cooī instead of roī (bread).

Professor Passy¹ illustrates the French child's pronunciation of təp for serpent, and there is considerable force in his explanation that it is easier to maintain two organs against each other by closing the passage of air than by producing a friction. But this mode of articulating the initial consonant with a full plosion would not be easy for all classes of speakers. As has been shown above, even Indian dialects have shown considerable variation in the treatment of these sounds. The phenomenon described by the Śikṣāś, then, is a part of the general phonetic tendency which has occurred in several, though not all, linguistic areas in the country.

1. Changements Phonétiques p.144.

with a succeeding fricative is confirmed both by Pāli and Prakrit.

In the case of Prakrit, the p of Sanskrit is generally associated to a succeeding non-fricative consonant in Prakrit, e.g. śip, garjati = Prakrit garjati; garjati = garjati; garjati = garjati. But when the p is followed by a fricative, Prakrit may have the Svarābhāṣī vowel i or e, e.g. śip, garjati = Prakrit garjati; garjati = garjati; garjati = garjati; garjati = garjati.

In the case of Pāli, there is no doubt that assimilation to the preceding consonant is not noticed, as that for Sanskrit śip or garjati = Pāli garjati or garjati. But even Pāli has invariably the

1. Étude Phonétique, p. 144. Journal de la Société de Linguistique, 1904, t. 1, p. 144.

Chapter VII.

Svarabhakti.

The subject of Svarabhakti has been exhaustively treated by Schmidt in his "Geschichte des Indo-germanischen Vokalismus", and it is unnecessary to go over the same ground again. But a few interesting points may be noted here relating to the conditions and pronunciation of Sanskrit Svarabhakti, which have been mentioned by Indian Grammarians and which do not seem to have come to the notice of that scholar.

I. Svarabhakti and the fricatives.

All the Indian works¹ on phonetics, with the single exception of the Rg Prāt., point out the close connection of Svarabhakti with a succeeding fricative, stating that Svarabhakti occurs after r or l when they are followed by a fricative e.g. darea- will be pronounced as darⁱśa-; arhā = arⁱhā etc. The close connection of Svarabhakti with a succeeding fricative is confirmed both by Pāli and Prākṛit.

In the case of Prākṛit, the r of Sanskrit is generally assimilated to a succeeding non-fricative consonant in Prākṛit, e.g. Skr. garjati = Prākṛit gajjati; gaddabhaḥ = gaddabha^a; garbhaḥ = gabbha^a; ālarka- = ālakka-. But when the r is followed by a fricative, Prākṛit may have the Svarabhakti vowel i or a, e.g. Skr. varṣa- = Prākṛit varīśa; karma- = karīśa; arhat- = ariha- or araha; garhā = garīhā.

In the case of Pāli, there is no doubt that assimilation to the succeeding consonant is more marked, so that for Sanskrit dāraśanay we have Pāli dassanay, for Skr. dirghikā Pāli digghikā. Yet even Pāli has invariably the

1. Taitt. Prāt. XXI. 15., Atharv. Prāt. I-102; Vāj. Prāt. IV. 17.

svarabhakti vowel a or i before the fricative h, e.g.

Skr. barha = Pāli bariha; arhati = arahati; etarhi = etarahi; garbh = garabh.

That the Svarabhakti vowel was closely connected with fricatives in Indian dialects may be further corroborated by the following examples from the edicts of Asoka: garabh, garaha, galahati, garahati, yathāraha.

The general tendency to prefer the Svarabhakti before fricatives seems to be peculiar to Indian dialects and it would be unsafe to venture a definite phonetic explanation of an obscure phenomenon occurring in these dead languages. Why did the Indian speaker say varga-, but varahe-?

To explain this contrast three points may be borne in mind:-

(1) Assimilation in Sanskrit was nearly always regressive.

Thus the Sanskrit speaker always pronounced vāk + cāna as vācāna, tat + ikate = tattikate. But the assimilating force of the succeeding consonant was much stronger when it was a plosive, so that in the group ṛ + plosive, ṛ was entirely lost in Prākṛit and thus no Svarabhakti occurred in this case. Even in the transitional stage before the duplication of the plosive in Prākṛit, it appears ~~to be~~ that ṛ lost part of its individuality and ceased to be a sonant.

(2) But when ṛ was preserved, it remained a sonant in Indo-European languages.

(3) Fricatives involve less closure than plosives do, and so are nearer to vowels than plosives are. In fact, their relation to vowels is so close, that, as Prof. Passy observes,² all fricatives can be changed into

1. Woolner's Glossary; pp. 84, 135.

2. Changements Phonétiques, p. 94.

vowels, if only the passage of air be enlarged.

It will appear from the above facts that assimilation in Indian dialects being regressive, the succeeding fricative was a more favourable ground for rendering more distinct the vocalic effect of the preceding sonant ṛ, and so a vowel was heard more clearly before h than before g. Still, I confess that the above explanation is not adequate, for this does not explain why in several other languages, as in French, in which regressive assimilation is predominant, the Svarabhakti before the fricative has not occurred.

The only safe assumption seems to be that the Indian preference of Svarabhakti before fricatives was an independent innovation.

II. No Svarabhakti when the fricative was followed by a consonant.

All Indian works on phonetics¹ maintain that the fricative before which Svarabhakti arises should not be followed by a consonant, i.e. must precede a vowel; thus there was said to be no Svarabhakti in pārevatah, where the fricative ṣ is followed by a consonant.

This opinion of Indian Grammarians is confirmed by Pāli and Prākṛit, for Sanskrit ṛ + fricative + consonant ^{has} in Pāli and Prākṛit ^{often become a} doubled fricative, to which ṛ was entirely assimilated, cf. Skr. pārevā- = Prākṛit pāssa-,
Skr. varāya- = Prākṛit vassa-, etc. ^{Their observation, then, indicates the}
^{transitional regression of Skr. ṛ before it ceased to be a sonant (cf. p. 223).}
^{lost, no Svarabhakti could occur in this case. But when ṛ was preserved, Svarabhakti was maintained as in various cases of ṛ before vowels.}

The above two facts, then, as corroborated by the evidence of the living dialects would solve Whitney's particular difficulty in understanding our Grammarians' observation of Svarabhakti. For he says in this connection, "The reason for distinguishing the case of a following spirant - and that, too, only when followed by a vowel, - as

1. Vaj. Prāt. IV.7; Atharva Prāt. I.108.

requiring a longer insertion, is not so clear, and I confess myself unable to discover the pertinence of the distinction: it is, however, a marked and important one to the Hindu phonetists." (Atharva Prāt. I-101-3). By "longer insertion," Whitney refers to the Atharva Prāt.'s opinion that Svarabhakti before fricatives was longer in quantity than before other consonants. In other words, Indian Grammarians had observed that Svarabhakti was more distinct before fricatives than before other consonants - a fact which had actually happened in the history of the language, as shown above.

III. As regards the pronunciation of Svarabhakti, some of the Śikṣās give us interesting data. According to the Kośavī Śikṣā¹ and the Pratijñā Sūtra,² the Svarabhakti vowel should be pronounced like g, thus darśatan was to be pronounced da^hraśatan, paraśavyena = paraśavyena, śatāvalaśap = śatāvalaśap, hvarṣit = hva^hraṣit.

That the pronunciation of Svarabhakti as g or as a vowel approaching the quality of g, actually occurred in some of the ancient Indian dialects is ^{perhaps} confirmed by parallel phenomena in other Indo-European languages, where g has emerged after a liquid before a consonant. We find this in old Bulgarian, e.g. jelani (deer), želazo (iron).

According to the Lomañ Śikṣā, however, Svarabhakti was to be pronounced⁴ like g. Both the Yājñavalkya and the Māṇḍūkī Śikṣās, however, prohibit what they call

1. SS pp. 141-142.

2. II. 3.

3. Schmidt: Geschichte des Indo-germanischen Vokalismus, pp.

67, ff.

4. SS p. 460. .. svarabhaktes tathaiva ca, avarṇavat prayogaḥ.

the defective pronunciation of Svarabhakti.¹ To pronounce it like a or y was said to be a defect, and was to be avoided. The correct pronunciation of Svarabhakti according to these authorities was like i, so that śatāvalā- was to be pronounced śatāvalⁱśa-. ~~It appears to us that~~ This prohibition betrays a living phonetic fact, that all these pronunciations of Svarabhakti were actually current among the dialects of the time, and that the prohibition by the Śikṣā was an attempt to standardise its pronunciation by restricting it only to i. That a and y also intruded as Svarabhakti among several dialectic areas of the country is indicated by the examples already given. Thus in Pāli we have arahā side by side with arihā, while dhūrpādan even in the time of Brāhmanas, became dhūruśadan, see page 144. As, according to Pischel (p.103), a often appears as a Svarabhakti vowel only in Ardhamāgadhī and Apabhraṃśa, it is not unlikely that the Lonasī Śikṣā, which prescribes its pronunciation to be a, represents a geographical area to which Ardhamāgadhī and Apabhraṃśa belonged.

It is difficult to determine how far, where, and when i was the standard pronunciation of Svarabhakti. ^{It appears without} ~~There is no~~ doubt ~~that~~ from the orthographic evidence of Pāli and Prākṛit parallels ~~it appears~~ that i was more common; for while we have a only before h, i occurs both before a and h, e.g. arahā-, but varia-, arihā. Compare in this connection Pischel (p.104), who holds that i was the most common Svarabhakti vowel in Prākṛit.

1. Māpāṇī, verse 101.

CHAPTER VIII

Abhinidhāna (incomplete articulation)

The Prātisākhya and the Cārāyaṇīya Śikṣā describe the phenomenon of incomplete articulation, which has been generally called "Abhinidhāna" although two more names, viz. "Āsthāpita" "stoppage"¹ and "Bhākṣya" or "Bhukṣta"² are also used. This phenomenon has an important bearing on the Indian theory of the syllable and the history of consonants in the living dialects.

The phenomenon, as described in the Rg Prāt. (VI.5), consists in the repressing or obscuring of a plosive or a semi-vowel (except *r*) before another plosive or a pause. The sound displaying this phenomenon is said to be pressed (pīḍita), quite weakened (sannataraḥ) and lacking in breath and voice (hīnasvāsanādah).³ The term commonly used for this phenomenon is Abhinidhāna, which etymologically means "adjacent imposition." A parallel term has been used in Sandhi, the well-known "Abhinihita Sandhi,"⁴ in which *g* is merged in the preceding *g* or *ḡ*, as in agnetra (= agne + atra). Similarly the consonant or semi-vowel while undergoing Abhinidhāna loses part of its articulation in the adjacent consonant or a pause.

This phenomenon took place under the following conditions:-

(1) Plosive + plosive.

According to both the Rg and the Atharva Prātisākhya, and

1. Atharva. Prāt. I-48.
2. Cārā. Śik. Chapter VIII, Fol. 8. cf. p. 235.
3. Atharv. Prāt. I-43.
4. Rg Prāt. II-13.

the Cārayāṇīya Sīkṣā,¹ a plosive followed by another plosive underwent Abhinidhāna; thus in arvāgdevāḥ, g before d was said to be obscurely pronounced; similarly d before bh in marudbhīḥ. That in the actual pronunciation of the language there was a tendency to explode a plosive incompletely before another plosive, as the English do in words like "act" "empty" "begged" is corroborated by Pāli and Prākṛit, in which, as is well-known, a plosive followed by plosive is assimilated to the latter, ~~as~~ as in saṭṭa = Prākṛit satta. It may, however, be objected that this tendency might have been acquired by the living dialects at a later stage, and that Sanskrit proper does not distinctly manifest the Abhinidhāna of a plosive before another plosive. Nor were Indian authorities unanimous regarding this point. Thus according to Vjāli (Rg Prāt. VI-12) there was no Abhinidhāna of a plosive before another plosive; it only occurred when a consonant was doubled. According to the Sākāla, Abhinidhāna was optional when a plosive preceded another plosive of a different place of origin, as in muk:taḥ dag:daḥ; it was necessary only in the case of double consonants. Moreover, according to the same authority, Abhinidhāna did not occur in the joint utterance of two consonants,² it only occurred when the plosive in question was pronounced apart from the succeeding consonant, i.e. when there was a little pause between the two consonants, the first consonant behaving like a final consonant. Thus there was said to be no Abhinidhāna when the phrase "yadyad" was pronounced as "yaḍyaḍ", where d + y formed a consonant-group articulated without any intervening pause. But when the phrase was pronounced as "yaḍ:yaḍ", then d was said to undergo Abhinidhāna before the infinitesimal pause or breach of continuity

1. paraṣparaṇ sparaṇ bhuktau varjayitvā tu pañcamau.

MS. Götting. Pol. 8.

2. Rg Prāt. VI. 7-8.

between ḍ and ḡ. The Atharv. Prāt. also seems to be of the same opinion, for after laying down rules regarding the conditions of Abhinidhāna, which begin with the contact of plosive and plosive, it states that consonant-groups in which Abhinidhāna does not occur have a joint articulation.¹ Thus both according to the Śākalaś (mentioned in the Rg Prāt.) and according to the Atharv. Prāt., Abhinidhāna belonged to separate or asaṃyukta articulation of consonants. Hence Whitney's remark on Atharv. I.49 that "nothing is to be found in the other Prātisākhyaś corresponding to this rule" is subject to correction, for the parallel rule does occur in the Rg Prāt. VI.7 where it is ascribed to the Śākalaś. According to this opinion, then, there was no Abhinidhāna when an unbroken articulation maruḍbhiḥ was made, but when a separated utterance, as maruḍ:bhiḥ, occurred, in which there was a pause between ḍ and bh, then ḍ did undergo Abhinidhāna.

We have thus three different views before us:- (1) Every plosive before another plosive suffered Abhinidhāna. (2) No such phenomenon occurred, except in double consonants. (3) It occurred only in separated utterances. Now which of these three views was nearest the facts? As regards the first view, I have already indicated above that the evidence of Prākṛit very strikingly supports it, as it is hardly probable that the tendency to Abhinidhāna only abruptly arose in the living dialects. The germs of this tendency must have been present in the pronunciation of Sanskrit when it was a spoken language. The presence of these germs of Abhinidhāna can be inferred from several declensional forms in Sanskrit. Thus in the declension of words like maruḥ, jaṅat, we find that the plosive in Sanskrit

1. I.49. cf. Rg, Prāt. VI.7. cf. Max Müller ad loc.

declension is assimilated to the succeeding plosive, so that we get forms like maruḍbhyām, kakupsu. These examples indicate that the articulation of the plosive in question was lax; it comparatively lacked breath or voice, and so gave way to the succeeding sound. Forms like the above, then, are very probable cases of Abhinidhāna. But the clearest case of Abhinidhāna was, as Vyāḍi had observed, that of the first member of a double group of consonants, as in dattaḥ, agnih, where tt and gg exploded only once, the first t and g being unexploded. As regards those words, however, in which the plosive in question is in the medial position, and does not give any indications of assimilation, we cannot be certain whether the plosive underwent Abhinidhāna before another plosive. For instance, the plosives in words like atkaḥ, śrutkāraḥ, budbudḥ, do not give any indications of assimilation. In the case of such words Abhinidhāna must have varied with geographical conditions, some dialects exploding the plosive before another plosive and others not; compare, for example, the pronunciation of the words yakt, rakt in Hindustani and Punjabi. In the former, k nearly always undergoes Abhinidhāna before t, in the latter, it does not; the k, in most cases, exploding fully before t.

Besides variations due to geographical conditions, plosion of the plosive ^{may} ~~might~~ have varied with different consonant-groups even in a dialect which generally exploded a plosive before another plosive. French, for instance, has a strong tendency to explode a plosive before another plosive, and yet even in French plosion of p before t often does not occur, e.g. ⁱⁿ obtenir (ɔ̃tʔnir), petit Jean (pti ʒɑ̃)¹, while in the group kt, the explosion of k before t does not occur among many

1. Jespersen: Lehrbuch der Phonetik: 1st Edition p.162.

French speakers, e.g. in acteur.¹ There was considerable truth, therefore, in the observation of the Śākaḥas that Abhinidhāna was necessary only in the case of double consonants and that it was optional in the case of plosives with different places of origin. For in Sanskrit whenever there is a plosive-group with the same place of origin, the second member of the group must be always either an aspirated consonant, e.g. kakkhati, gaghati, "to laugh", uīh- "to abandon", the group being practically an aspirated consonant doubled, or the same as the first consonant, as datta, putta. In both these cases the plosive undoubtedly underwent Abhinidhāna. This was not necessary in those cases in which a nasal consonant followed a plosive, even although it belonged to the same place of origin as the plosive. Thus ratna, ṭ and ṇ were of the same place of origin: the explosion of ṭ before ṇ must have been subject to dialectic variations, though even here Abhinidhāna of the plosive was more probable. Many forms of the past passive participle of Sanskrit verbs ending in a dental betray a tendency of ḍ to Abhinidhāna before ṇ, e.g. padḍipanna, klidḍiklinna, adḍanna, ḥṇudḍikṣunna, khidḍikhinna. On the other hand, the corresponding substitute in several Prākṛit dialects for the Sanskrit group ṭ + ṇ = ṭṭ. This indicates that in the first instance ṭ before ṇ, instead of suffering Abhinidhāna, was so distinctly pronounced that it drove out even the ṇ, but when once the second ṭ also came in, the first ṭ naturally underwent Abhinidhāna of. Sanskrit patnī = Prākṛit patti, sapatna = savatta, sapatnī = savatti, prayatna = paatta.

1. Passy: *Changements Phonétiques* p.101.

2. Hg. Prāt. VI 7-8.

To sum up, then, in a group plosive + plosive there were three possible cases of Abhinidhāna. (1) Clear cases of Abhinidhāna occurred in double consonants. (2) Probable cases of Abhinidhāna, at least originally, were those in which the plosive was assimilated to the succeeding consonant. I say "originally", because it ^{may} ~~might~~ have been more convenient to explode the consonant subsequently arising from assimilation. Thus in vāghih, the original k of yāk very probably underwent Abhinidhāna, but the subsequent g arising therefrom ^{may} ~~might~~ have been easier to explode. (3) Variable cases of Abhinidhāna were those in which the first plosive does not give any indications of assimilation.

(2) Abhinidhāna of finals.

As regards finals, both the Rg and the Atharva Prātisākhya (VI-5, I-45) state that final plosives suffer Abhinidhāna, while according to the former the final semi-vowels except ṛ are also similarly affected. Even the Śākalas, who were generally opposed to the theory of Abhinidhāna, stated that if Abhinidhāna ever took place at all, it occurred only when there was an infinitesimal pause after the sound which was affected by this change, in other words, when the consonant or semi-vowel in question was semi-final. Thus when valśay was pronounced as val:śay, l was said to suffer Abhinidhāna, as there was a short pause after it, but there was said to be no Abhinidhāna when there was no such pause between l and ś. This observation is important in the history of Indian philology. For it is now an established fact¹ that the finals of Sanskrit were implosive, and this was also the opinion of Indian Grammarians, as I have shown above. But as regards pronunciation in a consonant-group,

1. Gauthiot: La fin de mot en indo-européen, p.91.

the fact that Indian authorities were not unanimous on this point shows that the Abhinidhāna of a medial consonant when followed by another consonant was still passing through a transitional stage in the pronunciation of Sanskrit. The medial consonant also was influenced by Abhinidhāna though not so much as in the case of finals. Thus, while Sanskrit final plosives have been lost in Prakrit, Sanskrit plosive + plosive or semi-vowel + plosive has been assimilated to the latter in Prakrit. This doubling when a succeeding plosive followed indicates that in the medial position the sound undergoing Abhinidhāna did not entirely lose its individuality, as it did in the final position, and that consequently in the transitional period of Sanskrit pronunciation, Abhinidhāna did not affect the medial consonant so powerfully as it had affected the final consonant. As regards the semi-vowels, I have demonstrated in the Chapter on Semi-vowels, (see page 214) that in the final position they underwent "lessā" and so largely lost their articulation.

The commentary on the Vāj.Prāt. I-20 gives the interesting injunction that the final plosive of a word should be articulated by a release or separation of the organs of production.¹ This injunction to complete the articulation of finals betrays the fact that the actual state of affairs was the contrary and that the injunction was a warning against the presumable provincialism of the incomplete articulation of finals.

The Atharv. Prāt. II-38, states an exception to the Abhinidhāna of finals, and calls it "Sphoṭana", lit. break, consisting in the full release of breath in the articulation of a plosive at the end of a word. It states that when a final plosive is followed by a consonant the tongue position

1. sparsāntasya sthāna-karāṇa-vimokṣaḥ kartavyaḥ.

of which is more backward the said final plosive is fully exploded and consequently suffers no Abhinidhāna. Thus the t in vaṣaṭkāreṇa, t in avatkam and ejatkaḥ, b in tristub + gāyatrī, d in yad + gacchati, p in anustub + tataḥ, are to be fully exploded, as they are followed by more backward consonants, k, g, and t. But t in tat + paśyati, k in yāḥ + teṣa, t in pat - tadā will undergo Abhinidhāna, as they are followed by more forward consonants. The author is right if his theory is to be taken in a relative sense, for when a forward plosive is followed by a more backward consonant, the former, being nearer the opening of the mouth, has a better chance of exploding than in the reverse case. But the theory breaks down if it is to be strictly applied to the facts of Sandhi. Thus in tat + tikate, t being a more forward consonant, ought to have exploded fully before t, but we know that it did not; for it was

oe: t
cerebralized and so suffered Abhinidhāna in tattikate. Similarly in the example tristub + gāyatrī, p, although a more forward consonant, was vocalized and changed into b, indicating a laxity of articulation. And when we take into account the great fact of the loss of the original Sanskrit finals in Prākṛit, irrespective of the forward or backward nature of the consonant, we are forced to the conclusion that the tendency to implosion of all finals must have been originally present in the articulation of all Sanskrit plosives, though relative variations among individual consonants ^{may} ~~have~~ existed.

(3) Variation of Abhinidhāna among individual consonants.

The Cāṇḍiyya Sūtra handles the problem of the variation of Abhinidhāna among individual consonants and points out in this connection that the breathed unaspirated plosives, the nasal consonants and the semi-vowels l and y are incompletely

articulated (bhukta), the rest are completely articulated.¹ But when another consonant follows, then, says the Sikṣā, the ten breathed plosives suffer Abhinidhāna.² "When two plosives come together, they repress each other; not so, however, two nasal consonants, except that h before n should be repressed with effort, as in vāṇopachagayati. The eight consonants, viz. the semi-vowels and fricatives do not repress one another, but when a plosive is followed by a semi-vowel, it belongs, like wine, to both the classes."⁵

The above details regarding the variation of Abhinidhāna among individual consonants are interesting, and show how minutely the Sikṣās had observed this phenomenon. These details must have varied with particular dialects and even with individual speakers, and so we in this age are not in a position to pronounce a definite judgment on their accuracy. At any rate, the vast variations of incomplete articulation among individual speakers and dialects observable at the present day indicate that there is nothing against the possibility of these particulars being actual in the particular sphere of speakers observed by the author of the Cārāyapiṭṭha Sikṣā. We may, however, consider the relative probability of these data.

1. vargāṇāṃ prathamaṃ bhuktā bhuktāṃ caiva tu pañcanāṃ
antasthānāṃ lavau bhuktau śeṣaṃ cānye 'bubhukṣitāḥ.
2. varge varge dvikan cādyam daśakan varṇa-samayan
paraṇaṃ saha-yogena bhakṣya-vṛttiḥ prasasyate.
3. parasparam sparśau bhuktau varjayitvā tu pañcanau
nakārah pañcanair yatra bhoktavyam tat prayatnataḥ.
4. yakārādi-nakārāntam aṣṭakam ca parasparam
catur' caturō vā'pi tv abhakṣyam poṣaśāpāram.
5. sparsā antastha-samyuktā nadireva dvijātibhuk.

The Śikṣā asserts that the breathed unaspirated plosives and nasal consonants when not followed by a consonant are incompletely articulated. If the Śikṣā refers to them only when in the final position, the case is quite clear and requires no further discussion. But as there is no such qualifying statement in the verse in question, the author is presumably speaking here of the consonants both when final and when followed by a vowel. Two questions now arise:- (1) Of all consonants why were only the breathed unaspirated plosives and nasal consonants marked out for Abhinidhāna in these two positions? Was the relative degree of Abhinidhāna greater in their case than in the case of other consonants? (2) Why did these two sets of consonants suffer Abhinidhāna even before vowels? The only safe reply to these questions is the one already made above, viz. - that there is nothing against the possibility of these variations being actual in the particular sphere of speakers observed by the author - provided that the variation was only relative.

But when we take the case of the remaining sets of consonants, viz. the breathed aspirated and the voiced plosives, the comparatively lax utterance of these consonants probably could not strike the hearer so distinctly as in the case of breathed unaspirated plosives. For when th, ḍ and dh were incompletely articulated something like "t", "ḍ" and "d" respectively, the hearer probably heard consonants familiar to him, the extra aspiration and the voice having been reduced. But when p, k and g were incompletely articulated, the resultant sound was presumably much less familiar to the hearer, and so it was specifically the breathed unaspirated plosives that were set apart as subject to Abhinidhāna. The incomplete utterance of these plosives even before vowels probably meant only a shade

of laxity so common to Sanskrit consonants. But if the author is speaking here of intervocalic plosives, their being more or less subject to Abhinidhāna was beyond dispute.

As regards the nasal consonants, the reason why they were specifically set apart for Abhinidhāna is not far to seek. When in the final position, their change into Anusvāra even before vowels and before a pause in Prākṛit proves how powerfully Abhinidhāna had affected them. Moreover, the fact that even in the initial position the original Sanskrit n is represented in Prākṛit by a much laxer consonant, viz. the fricative ṇ, shows a laxity in the articulation of Sanskrit nasal consonants. The Śikṣā does not find any Abhinidhāna, however, in a group of nasal consonants, except in ṇ + ṇ. The completeness in the articulation of a nasal consonant before another nasal consonant may have been actually observed by the author in the dialects of his time; but there are three reasons why his theory can not be accepted if it is taken as a general tendency in the history of Indian Philology. Firstly, in the case of double nasal consonants, Abhinidhāna of the first nasal consonant, as in annaṇ, hinnaṇ, could not be questioned. Secondly, when the tendency to lax utterance of sounds is present, it is particularly easy to pass immediately from one nasal consonant to another. Thirdly, the evidence of the living dialects does not confirm the Cāṇḍiyanīya Śikṣā's view of the complete articulation of a nasal consonant before another nasal consonant. Thus in Prākṛit both ṇ before ṇ and ṇ before ṇ have been assimilated to the succeeding nasal consonant; cf. Sanskrit ninnagaḥ = Prākṛit ninnaga or ninnāḥ; Sanskrit unnāḥ = Prākṛit unnāḥ.

The Śikṣā states that in a group plosive + semivowel, the plosive "like wine, belongs to both the classes." The analogy is rather obscure, wine probably being referred to both as a

beverage and an intoxicant. At any rate, the author's intention is plain: the plosive remains partly a plosive, but partly partakes of the succeeding semi-vowel. This modification of the plosive was correctly observed when a dental was followed by the semi-vowel y, compare, for instance, Sanskrit adya = Prākṛit aija, the dental retaining its occlusion, but at the same time becoming a palatal affricate. But the theory does not seem to be corroborated in the case of other groups, for instance in k + y or t + y, cf. Sanskrit śakya = Prākṛit sakka, Sanskrit sattva = Prākṛit satta.¹ It is possible, however, that there was a slight shade of modification in the plosive even in these groups, especially in k + y, during the transitional stage of this change, but whether the plosive was affected to such a degree as to belong to a different phoneme is not confirmed by the orthographical data of literary Prākṛit and Pāli.

In this connection the observation of the Varparatnadīpikā Śikṣā is interesting. It states that the combination of plosive + semi-vowel was lax, and compares the combination to a wooden ball,² which can be broken easily. This observation was more valid in the case of Vedic Sanskrit,³ where words containing plosive + semi-vowel had under certain conditions doublets containing plosive + vowel + semi-vowel, e.g. dyā, beside duā. But when we also take into account the fact that in Vedic Manuscripts adya was often transcribed addya and in the parallel development of the language, became aija, the connection between d and y was not broken in the division ad/ya, though it ^{may} ~~must~~ have been broken in the division add/ya; while in aija the combination became much closer. These facts

¹ There are some indications of such corroboration, however, for the groups ky and ky, cf. calpāro (Hultsch) kalpāro (Kashm. kalu 'ripe' < pakvā).

sparsā apāṣṇā ye cāntasthābhis' ca saṃyutāḥ
dāru-piṇḍa te tulyāḥ śiatha-bandhāḥ prakīrtitāḥ.

indicate that the combination was not so universally easy to break as was supposed by the Śikṣā. In the same connection there is to be found in the Yājñavalkya Śikṣā a curious classification of consonant-groups according to the laxity or closeness of their combination. This Śikṣā classified consonant-groups into seven kinds, and figuratively calls each combination respectively (1) an iron ball, (2) a ball of clay, (3) a ball of flame, (4) a ball of wool, (5) a wooden ball, (6) a ball of air, (7) a ball of thunder.

(1-3). A consonant-group in which a Yama occurred was called an iron ball e.g. in agñi, patkñī; that in which an Anusvāra occurred, a ball of clay, as in saṁsthā, sihī, and that in which a Nāsikya occurred, a ball of flame, as in brahma, vahnitama. It is extremely difficult to determine now how far this figurative differentiation of Yama, Anusvāra and Nāsikya actually represented the facts. But the comparison, if true, seems to indicate that in actual pronunciation the combination between a consonant and a yama was closer than it was between an Anusvāra and a consonant. The Anusvāra, as ^{will be} has been explained in Chapter IX, had sometimes a vocalic and sometimes a consonantal element, and consequently its combination with the succeeding consonant was likely to be facile, especially when it had a strong vocalic element. The Śikṣā seems to distinguish between a Yama and a Nāsikya, restricting the former to the group plosive + nasal consonant, and the latter to the group non-plosive + nasal consonant, as in the word brahma. The combination of this additional nasal sound with the fricative has been compared to a ball of flame - a comparison which it is very difficult to explain. Perhaps nasality so intensely attacked the h in the actual pronunciation of the group that it called forth the analogy to a flame.

(4). A hissing fricative + nasal consonant, in which no Yamas were said to occur, was compared to a ball of wool, as in śaman, kṛpāḥ. As a nasal consonant was not said to nasalize the fricative in these examples, the two sounds remained distinct from each other, and were compared to a ball of wool, of which the threads remain comparatively apart from one another.

(5). The group consonant + semi-vowel was compared to a wooden ball, as already explained above.

(6) & (7). The fricative Upadhmaniya + labial was compared to a ball of air, as in dyauḥpitā, yupjānaḥprathanam; while the fricative jihvāṣṭīya + velar plosive was compared to a ball of thunder, as in haviḥkṛt, divaḥkakut. The analogy to "thunder" and "air" respectively seems to indicate that when followed by velars the explosion of the fricative had to meet greater resistance than when followed by labials. This difference was phonically possible if the transition from the fricative to the velar plosive was more abrupt than from the fricative to the labial plosive. But the pronunciation of the Upadhmaniya and the jihvāṣṭīya not being exactly known at the present day, it would be unsafe to give any definite opinion on the matter.¹

Again, the Cārāyaṇīya Sīkṣā asserts that the ten breathed plosives, when followed by another consonant, suffer Abhinidhāna. If the author intended to restrict the Abhinidhāna only

1. S' S p. 29. atha saptaavidhāḥ saṃyogapindāḥ. ayaspindo
pindas' ceti. yamān vidyād ayaspindān sātasthān dārupindavat,
pindas' ceti. yamān vidyād ayaspindān sātasthān dārupindavat,
antasthān yamavarjam tu ūrpāpindān vinirdiśet. jvalāpindān
śanāsikyān sānuvārāps tu nṛmayān, sopadhman vāyupindāps
tu jihvāṣṭī tu vajrinah.

to the ten breathed plosives, then his observation was valid if he meant it in a relative sense, for modifications as in maruḍbhyām, vāgbhip, arvāgdevāp, etc. indicate that the Abhinidhāna of breathed plosives was a more common occurrence. But words like anna-from ad, klinna-from klid indicate that the Abhinidhāna of voiced plosives was not uncommon in Sanskrit. This is also confirmed by the living dialects; of. Sanskrit uḡgama- = Prākṛit uḡgama-; Sanskrit budbuda- = Prākṛit bubbug-; Sanskrit udbhata- = Prākṛit ubbhata-; Sanskrit puḡgala- = pōggala-.

According to some authorities, as stated by the Ṛg Prāt.¹ Abhinidhāna was necessary in the case of velar plosives, as in saṃyak śravaṇī. This seems to be a valid observation, if taken in a relative sense, for of all plosives, the velars, being the farthest from the cavity of the mouth, are among those plosives which run the greatest risk of suffering Abhinidhāna. And this is to some extent corroborated by the same Prātisākhya in Chap. XIV on incorrect pronunciation of Sanskrit. Among the various faults of pronunciation, a particular defect, viz. grāsa,² consisting in the repression of the back of the tongue, was mentioned, and the back vowels a and ā were stated as being subject to this incomplete articulation. What happened to the vowels may have similarly affected the velar plosives.

The Atharv. Prāt.⁴ states that ḷ before fricatives suffers Abhinidhāna, as in valiṣāḥ. This probably refers to a sporadic phenomenon in some of the dialects, for in the majority of cases we should expect Svareḥhakti after ḷ or ṛ before fricatives. The fact that this sporadic phenomenon actually existed in some dialects is corroborated by Prākṛit vassa, side by side with, in the majority of cases varisa; valiṣa- (Venīsaṃhāra III.3.4.)

1. sākalam prathamam sparsam varge. VI. 8.

2. jihvāntānigrāhe grastamstat. XIV. 8.

3. grāsam kapṭhyayop. XIV. 4.

4. I-46. lakṣaṇayopamasu.

1. ~~✱~~ Atharva Prāt. I.26.

2. mo' nusvārah VIII. 3.23

2. I. 18. am 111

4. nÄäsikeyän nÄäsikeyäyän nÄäsikeyäyän. 1-20

under certain conditions, or, as the Cārāyaṇīya Śikṣā¹ would have it, Anusvāra is a dependent sound, which can manifest itself only on the basis of another sound. In the same way Kaccāyana², in his Pāli Grammar, terms the Anusvāra as Niggahīta or arrested "ṃ". Whether the "ṃ" is arrested, dropped, or changed, it is essentially the same phenomenon, termed as Anusvāra by Pāṇini, Niggahīta, by Kaccāyana, and Anunāsika by the Atharvaveda Prātiśākhya. The real defect in the treatment of Anusvāra by this Prātiśākhya lies in the ambiguity of the term 'Anunāsika'³, by which it designates both the nasal consonants and the Anusvāra, just as the R̥gveda Prāt. uses the general term Nāsikya⁴ for Nāsikya proper (pure nasal vowels), Anusvāra and Yama. Moreover, there is another passage in the Atharvaveda Prātiśākhya which indicates that even this work does not acknowledge an original or absolutely pure nasalized vowel, for it gives the antithesis pure vowel (non-nasal): nasalized vowel, stating, in connection with Krama Pāṭha, that a vowel which is pronounced nasal in the first instance should be pronounced

1. Chap. II, Fol. 1a.

anusvāro visargaśca kalapāṭhah plutā yamāḥ
jihvāmūlān upadhṛā ca śodasaite parāśrayāḥ
aśarīrās tu ye varṇā vijñeyāstu parāśrayāḥ
anyam varṇam sanāśritya darśayanti nijam vapuh.

2. I.18. am iti niggahītam nāma.

3. I.11 uttamā anunāsikāḥ. I.83 anunāsikāntaḥ pade hraśvah I.67. nakāramakārayorlope pūrvasyānunāsikāḥ.

4. nāsikyān nāsikyayamānusvārān. I-20.

pure when the word is repeated in the Krama Pāṭha; thus the Krama version of ā babhūva, will be ābabhūva: babhūve 'ti babhūve. Again, it was the nature of the Anusvāra which taxed the brains of ancient Grammarians like Vyādi, who, according to the Rg Prāt. was not decided as to whether the Anusvāra was a pure nasalized vowel or a nasal appendage to a vowel. It is the Anusvāra, then, of which the Atharv. Prāt. speaks as a nasalized vowel.

It is in later phonetic treatises, the Śikṣās, that a special term has been reserved for the pure nasalized vowel, viz. 'Raṅga', though we find traces of it in the Rg Prāt. which speaks of the rakta or nasalized (lit. coloured) pronunciation. According to the Pārisīkṣāṭīkā (MS Madras No. 924) Raṅga proceeds from both the nostrils, it has a deep and sweet sound, sweet like the notes of bells, deep like a tiger's roar, and should be pronounced

1. IV. 121 anunāsikah pūrvaśca suddah - yah pūrvam -
anunāsiko dr̥ṣṭah sa parihārakāle suddham krtvā parihartavyah.

2. XIII.15 anantastham tyanusvāraṁhur vyādināsikyam
anunāsikam vā.

3. XIII.5 rakto vacano mukhanāsikābhyām.

XIV.20 raktam hrasvam dr̥ghavyentyugraṁ ōkah.

I.17 raktasamjñō'nunāsikah.

2. In the collection No. 21 of 1875-76 Bhambardkar Oriental Research Institute, Poona. mathendranilaparibhāṣābhāṣitah
raktamānir yāti hi ālabhāvan, tāniva nāsikānām raktah
avaroṇi rakṣāvan upaṭi kṛtānah. Fol. 156.

without any addition of the consonantal element ñ, just as the milkmaid in Surāstra when selling curd, exclaims 'takrā^ñ', the vowel therein being purely nasalized. That the entire vowel was nasalized in this case has been illustrated by another work, viz. the ² 'Sikhyā Pāṭha'. Just as a pearl, overpowered with the light of sapphire, becomes blue, so the entire vowel, when nasalized, becomes a Raṅga.

This Raṅga, then, as in mahān īndrah, alokān u was a distinctive designation for the pure nasalized vowel, the term Anusvāra being more general and indefinite, sometimes restricted only to what the Śikṣās termed as Raṅga, and sometimes covering both the aspects of a nasal sound.

1. raṅge mukhe vyāghraruto psamam syāt
mātrādvayam hr̥janitam tvanāsyam
 --- --- ---
 --- --- --- iha kāmsyaghantānādaḥ
nādaḥ sakampah sa tu mūrdhajātaḥ
nāsikyarendhradvaya- niruto 'ntye
syādekamātrah sa tu kākalī syāt. 153.

Saurāstrkā gopavadhūn sukantha- avarena takrām iti bhāsa te yathā
tathā saṁuccārya vadet svakālād raṅgasca kampah khālu vardhate
sah. 155. Similarly in Pāṇiniya Śikṣā 8'8 p.380.

2. In the collection No. 21 of 1875-76 Bhandarkar Oriental Research Institute, Poona. yathendranīlaprābhayābhibhūtaḥ
muktāmanir yāti hi nīlabhāvam, tathaiva nāsikyagunena yuktaḥ
avaropi raṅgatvam upaiti krtsnah. Fol. 23 b.

pronounced taṇ ghnanṭi, or taṇ ghnanṭi. While these extreme cases

(2) According to another view, represented by the Rg Prāt., Anusvāra had either of the vocalic and consonantal elements, or, as the Rg Prāt. puts it, Anusvāra was either a vowel or a consonant.¹ Uvāṭa's explanation, that it was equivalent to saying that it was neither a vowel nor a consonant, is ~~in my~~ ~~not~~ not satisfactory. For this negative explanation not only fails to give any definite and positive idea of the Anusvāra, it misses an important phonetic phenomenon which must have been observed by the Prātiśākhya in the various dialects of its time. ^{Of these, had} ~~in some of which~~ the consonantal, ^{the others} ~~the vocalic~~ ^{the vocalic} element ~~was predominant in~~ ^{of} the Anusvāra, ^{predominant} ~~while in others the~~ ~~vocalic element dominated~~. This is strikingly illustrated by the mistakes in Sanskrit pronunciation pointed out in that remarkable chapter², viz. Chapter XIV of the Rg Prāt. It points out, for instance, that some people erroneously nasalized a vowel before a nasal consonant, as in na nūnam; in some people the tendency to nasalize was so strong that they nasalized even the Visarga after a nasalized "ā" or after a nasalized "ṛ", as in svatavāṇḥ pāyuh and nṛṇḥ patibhyah. While these were pointed out as examples of exaggerated rakta pronunciation or vocalic nasalization, there were other people who exaggerated the consonantal element of the Anusvara and added a strong consonantal "ṇ" to an Anusvāra, as taṇ ghnanṭi was

1. I.11.

2. XIV. 24.

pronounced tañi ghnanti, or tañ ghnanti. While these extreme cases of nasalization on the vocalic or consonantal side were condemned as provincialism, the Rg Prāt. evidently observed a living phonetic phenomenon, and finding that even the educated could hardly escape it, had to set up a standard, a vis media between these two types of pronunciation.

(3) According to the third view, represented by certain phonetic treatises of the Taittirīya School, the Vaidikābharṇa, the Sarvasamṇata Śikṣā and the Yājñabṛṇṣana, the Anusvāra was entirely a consonant, and was to be pronounced like half "g". Thus commenting on the Taitt. Prāt. II - 30 the Vaidikābharṇa remarks, "The object of the statement that both the Anusvāra and the nasal consonants are Anunāsika is to reject the theory of another school which maintains the Anusvāra to be either a vowel or a consonant. For Anusvāra in our school is entirely a consonant like the nasal consonants proper, as its articulation is that of half g".¹ ~~I do not think, however, that the~~ Taitt. Prāt. might have been, its expositors, in maintaining the

1. Taitt. Prāt. II.30 anusvāro vyanjanam vā svarō veti paramatan-
nirāsārtham idam ucyate. anusvārōpyuttamvad

vyanjanamevāsmacchākhāyam, ardhaḡakārarūpatvāt. Similarly
Sarvasamṇata Śikṣā, 43. Yājñabṛṇṣana:

yājñyanusvāra ihāpi yatra
bhaveddhyardhaḡakārayuktaḡ 161.

Vaidikābharana ^{does not} give here a valid interpretation of the statement of the Taitt. Prāt. For merely putting together both the Anusvāra and the nasal consonants in the same category i.e. designating them as Anunāsika could not necessarily imply that the Anusvāra was also a consonant. It only indicated a feature common to both, viz. nasality. Moreover, that the Taitt. Prāt. did not intend the Anusvāra to be entirely a consonant is implied by another set of rules, viz. those in which the Prātisākhya puts the Anusvāra side by side with other vowels like "a", and designates all of them, including the Anusvāra, as short,¹ while if Anusvāra had been intended to be entirely a consonant, its quantity (like the quantity of every consonant according to Indian Grammarians) being ^a half-mora, the Anusvāra would not have been allowed the ^{same length as} ~~position of~~ a short vowel, the quantity of which was held to be one mora. But however untenable this interpretation of the original intention of the Taitt. Prāt. ^{may} ~~might~~ have been, its expositors, in maintaining the Anusvāra to be entirely a consonant, betray a tendency for consonantal Anusvāra in certain dialects of the time, a tendency for which several Sanskrit inscriptions offer considerable evidence. ~~Let us cite~~ A few examples ~~may be given:-~~

1. I-32-33-34

akārasa. tena ca saṁānekālasvarah. anusvārasa.

I. Gupta Inscriptions

parivṛāṇanāṛtham (No. 2) vanśajasya (15, 26, 28, 29, 31)
anśāni (Nos. 12, 28), catvāriṇśad- (Nos. 16, 21)
guptavansāikavīrah (No. 13) siṅhābhyaṁ (16, 23)
vanśalakṣmī 1 kārāṇa (29)
tejāṇsi (33, 34) aṇṣunān (17)
viṇśati (30) siṅha- (39, 40)
vanśa (33) prāṇsu (32)
aṣṭaviṇśati- (38) bhūyāṇsi (35)
anśa- (39, 49) vaśāṇsi (35)
hanśa- (46) abhrāṇsi (35)
nṛgaṇśa- (81) nistrīṇśa- (81)

II. Badar Pillar Inscription of Pāla kings: Epigraphia Indica, Vol. II.

by the MS work kalyāṇasaṁśi, vanśasya, pāṇsu is interesting.

III. Duddhapani Rock Inscription of Udayayamana (8th century

1 ed. A.D.) Epig. Indica Vol. II.

tusārabhāṇsi, vaśāṇsi, kaśmīnit, siṅha, aṇśuka-nistrīṇśa-

2. vanśa prāṇsu siṅha abhrāṇsi nistrīṇśa-

siṅha prāṇsu siṅha abhrāṇsi nistrīṇśa-

Com.----- vanśa prāṇsu siṅha abhrāṇsi nistrīṇśa-

ritah. 53.

The above examples indicate a strong tendency, in certain dialects of the time, to pronounce the Anusvāra as an author, consonant or very nearly like a consonant. Thus the Pratijñā Sūtra ¹ lays down that the Anusvāra should be pronounced nearly like the nasal consonant corresponding to the plosive that follows it, e.g. in tan jānan, the Anusvāra should be pronounced nearly like "ñ". Again, the Siddhānta Śikṣā ² (MS Madras No. 1012) states that the final "m" of tvaṃ may be optionally pronounced "ñ" in the Vedas, and it enumerates a few more words in which the Anusvāra is said to be pronounced as "ñ", e.g. śīnte, vr̥nte, mañtām, yuñdhvañ, vr̥ñdhvañ. In this connection the etymological explanation of the term Anusvāra given by the MS work Yājñabalkya (Madras No. 924) is ^{however fanciful} interesting. Anusvāra is that which in the succeeding some of the modern

1 ed. Weber: 25 Rule:-

parasavarṇa īṣat prakṛtyā cānyatra.

2. tvañ māhyarvāñ tato viṣvañ tiryāñ dvāñ natau sadā

śīnte vr̥nte sma mañtām ca yuñdhvañ vr̥ñ-dhr̥ñ-dhināstathā---

Com.----- tvañ ityaśya vā ñakāro' ntādeśaschāndasa ityanyo' 15.

rthah. 53.

bhavedādeśyārdhagokṛayukta. 161. cf. p. 247.

the consonantal element of the Anusvāra without lengthening half of the syllable is pronounced like a vowel; from anu = succeeding, svāra = vowel¹. But according to the same author, as I have already indicated above, the Anusvāra is to be pronounced like half g in the yajurveda. There is an apparent inconsistency in these two views; but ^{perhaps} ~~I think~~ the author either meant that although the Anusvāra had essentially a vocalic element, it had acquired a consonantal element in the particular dialect or dialects of the Yajurveda School, or he meant, as it seems ~~to me to be~~ more probable, that the Anusvāra had both the elements, the consonantal element being only half g and not a full g, as ~~it is preserved~~ in the modern Bengali and ^u ~~er~~iya pronunciation of the Anusvāra in Sanskrit loanwords. That there was a distinct consonantal element in the pronunciation of Sanskrit Anusvāra in certain geographical areas of Northern India is corroborated by the evidence of some of the modern living dialects. Thus Hindi has lengthened the quantity and at the same time effected the pure nasalization of those vowels which have an Anusvāra in the corresponding Sanskrit words, while Panjabi has preserved and probably emphasized

1. anusvaryate pascārdhe svaravad uccāryata ityanusvārah.
(Chapter on Technical Terms) 15.

2. yajusyanusvāra ihāpi yatra

bhavettadādyardhagakārayuktah. 161, cf. p. 247.

the striking difference between the Anusvāra as we find it in Sanskrit and in Prakrit consists in its more limited scope in Sanskrit. Anusvāra in Sanskrit (1) cannot

the consonantal element of the Anusvāra without lengthening the quantity of the vowel. Thus Sanskrit vaṃsa- has become Hindi bās = Panjabi vañih, in the same way as Skr. danta- = Hindi dāt = Panjabi dand, Skr. bhaṃṣa- = Hindi bhāṅ, Panjabi bhaṅga, Skr. haṃsa- = Hindi hās = Panjabi hans, Skr. raṇḍā = Hindi rāḍ = Panjabi raṇḍī, Skr. khaṇḍa- = Hindi khāḍ = Panjabi khaṇḍ, Skr. bandhaya = Hindi bādh = Panjabi banh, Skr. kampaya = Hindi kāp = Panjabi kamb. The quantity of the Hindi vowel in these examples indicates a compensatory lengthening to correspond to the original heavy syllable due to the consonantal element of the Anusvāra, which Hindi has lost. On the other hand Sanskrit daśa ('ten') has remained Hindi das, Panjabi das, no change in the quantity of the vowel having taken place, as there was no Anusvāra with presumably a consonantal element after the vowel.

From the above paragraphs it will appear that both the pronunciations of the Anusvāra existed side by side in classical and preclassical Sanskrit: it will now be of interest to consider which of these pronunciations was more predominant in the historical development of the language.

It seems
~~I am of the opinion~~ that during the period of classical and pre-classical Sanskrit, the consonantal element of the

Anusvāra was more predominant, and that in Pali and Prakrit the Anusvāra verged more towards the vocalic side. For the striking difference between the Anusvāra as we find it in Sanskrit and in Prakrit consists in its more limited scope in Sanskrit. Anusvāra in Sanskrit (1) cannot

stand before a vowel: we always find its corresponding nasal consonant "ṃ" before a vowel (2) cannot stand before a pause (3) strictly speaking, cannot stand even before a plosive consonant, for although rules¹ of some Grammarians optionally allow it at the end of a word before another word with an initial plosive, its proper place in the interior of a word is only before fricatives,² while some of the above examples from inscriptions show that even before fricatives nasal consonants were often pronounced.

All these facts indicate that the Anusvāra in classical Sanskrit had a predominant tendency to possess a consonantal element, or an element that was only an appendage to the preceding vowel or the succeeding sound. In Pāli and Prākṛit, however, as is well-known, the Anusvāra can and does most frequently stand before any of the above conditions, be it a vowel, a consonant, or a pause, although grammarians³, under the influence of academic Sanskrit, optionally allowed it before a vowel or a plosive. As the nasal consonant "ṃ" ~~corresponding to the Anusvāra~~, ceased to appear, as a general rule, before a vowel, a plosive or a pause in Prākṛit, this indicates that in most of the living dialects the Anusvāra

1. Pāṇ. VIII. 4.59, Taitt. Prāt. II.50.

2. Atharv. Prāt. II.33 "uśmasvetāntah pāde" Pāṇ. VIII. 4.58.

3. Kaccāyana IV - 2,5. Hemacandra I-24, I-30.

had a growing tendency to lose its consonantal element, although Grammarians and certain literary works, under the influence of academic Sanskrit, continued to preserve the old distinction of Anusvāra and Anunāsika in a comparatively limited number of instances, as the Anunāsika in jañunā, cāmunda ¹ kāuo. In this connection it would be interesting to note a parallel phenomenon in the Italic dialects, in which the consonantal n of Latin has been superseded by the nasalized vowel in French; cf. Latin centum = French sā; Lat. dens = FR. dā; Lat. ventus = Fr. vā.

1. Hemacandra I.178.

As regards the quantity of the Anusvāra, cf. pp. 164, 304.

The Nature of Accent

The accent, in the opinion of Indian Grammarians, was predominantly musical. This view of accent can be clearly seen in a striking passage ~~which I have come across~~ in the Śiśikāśālikā Yājñabalkya.¹ According to this work the seven notes of the musical scale proceed from the three accents, the high ('udātta'), the low, ('anudātta') and the Svarita (~~'svarita'~~). The first note ('śadja') and the second note ('ṛṣabha') are said to "arise from" the low accent, the third ('gāndhāra') and the fourth ('madhyama') from the high accent, and the fifth, the sixth and the seventh ('pañcama', 'dhaivata' and 'niṣāda') from the Svarita. Of the last three notes, the seventh ('niṣāda') is said to "arise from" the independent, the Abhinihita, and the Kṣaipra varieties of the Svarita. Thus the independent Svarita as in kaṇvā, the Abhinihita as in sô bravīt, and the Kṣaipra as in krāhī avāsmān were said to "produce"

1. gāndhārako madhyama ucca-jātaḥ

śadjaṛṣabhaḥ dvau nihatodbhavaḥ stah

pañcamo dhaivatako niṣādaḥ

trayaḥ svarāṣa svaritāt tu jātaḥ. 83.

com.:— gāndhārākhyasvarah madhyamah tadākhyasvarāṣa

ucca-jāta uddātasvarā-jāto bhavati etc.

cf. p. 20 (footnote).

2. anudāttaḥ yadi śiśikāśālikā

stah ca śadjaṛṣabhaḥ dvau

the seventh note ('niṣāda') in the musical scale. The sixth note ('dhaivata') "proceeded" from the Tairovyañjana and the Pādavṛtta varieties of the Svarita, e.g. the Tairovyañjana Svarita as in ūriāsvatī and the Pādavṛtta as in tā āsrīt "produced" the sixth note. The fifth note ('pañcana') proceeded from the Prasliṣṭa and Prātinata varieties of the Svarita. Thus the Prasliṣṭa in sūdgata and the Prātinata in iṣe tvā "produced" the fifth note in the musical scale.¹ The first note was said to "proceed from" the low accent if it belonged to a long sound, while the second note "proceeded from" the low accent if the quantity of the sound was short².

1. tatrāpi nityo nihitaśca tétra
ksaipro niṣādasvarahetavaḥ syuh 84.

com. tatrāpi tasmin svaritavisaye'pi ye nityābhinihitakṣaiprāḥ
svaritās te'tra prakaraṇe niṣādasvarahetavaḥ syur
niṣādasvarasya kāranānītyarthah.
tathāntimasvāarakapādavṛttau
syātām tathā dhaivatahetubhūtau 86.

com. tairovyañjanasca pādavṛttākhyasca dhaivatasvarahetu-
bhūtau syātām.
prasliṣṭaprātinatābhidhānau
syātām tathā pañcanakāraṇe tau. 85.

2. athānudāttau yadi dīrghahrasvau
hetū ca sadjarsabhayoh kramena. 88.

Similarly the Nārada Śikṣā also states that the seven notes of the musical scale originate from the three accents of the spoken language. But this Śikṣā differs from the Pārisīkṣā as regards the particular musical notes originating from the accents in question. For according to this Śikṣā the seventh and the third (and not the fourth and the third, as the Pārisīkṣā asserts) proceeded from the high accent; the second and the sixth (and not the first and the second, as the Pārisīkṣā asserts) originated from the low accent; while the first and the fourth and the fifth notes proceeded from the Svarita accent¹.

The commentators do not explain what these authorities actually meant when they said that the various musical notes "arise" from the three accents. Three interpretations of this phraseology are possible:-

(I) These authors actually believed in the linguistic origin of music. Compare similar opinions in modern times, according to which "plain-song has been characterized as 'the blossoming of the tonic accent'".²

(II) It was "only an instance of artificial systematization on the part of these authors", as Burnell maintains³.

(III) It ^{may} ~~might~~ have been mere symbolic representation, with which Indian scientific literature copiously abounds.

1. S'S p.424 udatte nisādagāndhārāvandātta rsabhadhaivatau, svaritaprabhavā hyete sadjamaadhyamapañcamah.

2. Jules Combarieu: Music, its laws and Evolution p. 167.

3. Rktaṇṭravṛkaraṇa, p. XLVII.

I. As regards the first interpretation, there are indications, in some Sanskrit works on music, of the tendency to attach greater importance to human song than to instrumental music, and to connect song with human speech. Thus the leading ¹ Sanskrit work on music, viz. the Saṅgītaratnākara, states that "music is of three kinds, vocal, instrumental and the dance. But the dance follows instrumental music, while instrumental music follows vocal music. Hence owing to its predominance, we shall first describe vocal music". The ² author, in another passage, ultimately traces vocal music to the tone, but states that this tone, the product of energy and breath, is first manifested in the form of articulate sounds (of the Alphabet), from which arise words, and words lead to sentences". According to this then, language was the immediate, if not the ultimate, cause of vocal music, which, in its turn, dominated instrumental music and the dance. And according to our Grammarian, the author of the Nārada Śikṣā, good music depends upon distinctness of pronunciation.

1. 1.1 gītaṃ vādyam tathā nr̥tyam trayam saṅgītam ucyate 21.
nr̥tyam vādyānugam proktaṃ vādyam gītāmuvrttīṇa ato gītaṃ
prachānatvād atrādāvabhīdhiyate. 24.

2. gītaṃ nādātmanam vādyam nādavyaktyā prasasyate
tad dṿyānugatam nr̥ttam nādādhīnam atastrayam. 1.2.1.
nādena vyajyate varṇaḥ padaṃ varṇāt padād vacaḥ
vacaso vavahūro'yaṃ nādādhīnam idam jagat. 1.2.2.
nakāram prāṇanāṣṇam dakāram anālam viduḥ
jātaḥ prāṇāgnisamyogāt tena nādo'bhīdhiyate. 1.3.6.

Thus it speaks of ten kinds of good music, which it respectively designates as "the coloured, the complete, the elegant, the cheerful, the distinct, the loud, the gentle, the balanced, the delicate, and the sweet". Of these, the 'distinct' music was defined as that which consists in the proper expression of grammatical forms, viz:- "words, the meanings of words, roots and suffixes, the augment, verbal and nominal derivatives, compounds, verbs, particles, prefixes, accent, gender, cases", etc.,¹.

These facts indicate that according to the authors of the Saṅgītaratnākara and the Nārada Śikṣā music and language were closely connected. A much earlier work than the

Saṅgītaratnākara (circa 13th century), viz:- Bharata's Nāṭya Śāstra (5th century A.D.) does not attribute similar

predominance to vocal music, but even this work speaks of a type of music which was said to be exceedingly liked by the gods, and which he designates as the "Gāndharva"². This

Gāndharva had "three aspects, viz:- pitch, rhythm and language.

This language consists of vowels, consonants, syllables, Sandhi, cases, the noun, the verb, the prefix and the particles". The

close connection of music and language is therefore apparent in

1. S'S pp 401-2 :- gāṇasya tu daśavidhā guṇavṛttih, tad yathā raktam pūrṇam alankṛtam prasannam vyaktam vikṛtam ślakṣaṇam sukumāram madhuraṁ iti guṇāḥ ... vyaktam nāma padapadārtha-prakṛti-vikāragamalopskṛtā taddhitasamāsadhātunāpātopa + sarga...
vibhaktvyartha- vacanānām samyag upādāne vyaktam ityucyate.

2. Chap. 28, 9-16 :- etyartham iṣṭam devānāṁ tathā prītikaram punaḥ gāndharvānam ca yasmādāhi tasmād gāndharvaṁ ucyate etc., gāndharvaṁ trividham vidyāt svaratālapadātmakam etc.,

these works, though the later works seem to be inclined to establish a causal connection between them. Their attitude on this point, however, was not definite. Thus the Nārada Śikṣā which, as already mentioned above, attributes the musical notes to the three accents, states in another passage that the seven notes in the musical scale "arise" from the various organs of the body. "The first note arises from the throat, the second from the head, the third from the nose, the fourth from the chest, the fifth from the head, the chest and the throat, the sixth from the forehead and the seventh from a co-operation of all the organs"¹. Moreover, both the Nārada Śikṣā and the Saṅgītaratnākara, which seem to find a causal connection between music and human speech, mention in other passages some animals which are said to produce notes in the musical scale. For instance, according to the Nārada Śikṣā "the first note is uttered by the peacock, the second by the cow², the third by goats and sheep, the fourth by the heron, the fifth by the cuckoo in the Spring-time, the

1 S'S p. 411 :-

kanthād uttisthante sadjah śirasastv rsabhah sūritah
gāndhārestvanunāsikya uraso madhyamah svarah
uragah śirasah kanthād uochritah pañcamah svarah
lalātād dhaivatam vidyān nisādam sarvasandhiḥ.
 cf. Bhāṣika Sūtra III 19-24

2. The gradation of pitch mentioned above in the different animals seems to be fairly accurate; but it is curious that the author puts the cow's note higher than that of the peacock.

sixth by the horse, and the seventh by the elephant¹. It is possible, however, that these parallel analogies from the brute creation were given only to illustrate what, in the author's view, actually occurred only in the human voice, just as short and long quantities were measured in terms of the cries of certain birds, see page 290. Or, they ^{may} ~~might~~ have discovered the infancy of the causal connection between music and inarticulate speech even in the primitive stages of the animal kingdom.

Our authorities, then, indicate some faint ideas of a general theory of a causal connection between music and language, but I have not ^{found} ~~come across~~ any passage in which they have definitely worked out the theory.

II. According to another interpretation of this view, which was suggested by Burnell, it was only an instance of artificial systematization on the part of these authors. He maintains that these authors attempted "to identify absolutely the accents with certain definite musical notes. . . The pitch of the accents is merely relative, and the attempt

1. S'S p. 407. sadjam vadati mayūro gāvo rambhanti carsabha^m
ajāvikē tu gāndhāraṃ krauñco vadati madhyamaṃ
puṣpaśādhārane kālē kokil^ā vakti pañcamam
asvatu dhairvatam vakti nisāda^m vakti kuñjaraḥ.
 cf. Saṃgīta Ratnākara I.3.48

mayūracātsakachāra-krauñcakokila-dardurāḥ
gaḥṣaṣa sapta sadjādīn kramāduccārayantyaṃ.

to fix them absolutely by certain definite notes is merely one more instance of the spirit of artificial systematizing that meets one everywhere in Indian literature". This reason, however, cannot be accepted because, firstly, the wording of the text does not imply the identification of the accent with musical notes. The text used by Burnell was of the Mārada Śikṣā,¹ and even in this we find "avarita-prabhavā" "arising from Svarita." Now when B is said to arise from A, it does not imply that A = B. It rather suggests either a causal connection between A and B or a symbolic representation of A in terms of B. Now it has been shown above that the idea of a causal connection between accent and musical notes ^{may} ~~might~~ have possibly occurred to our Grammarians. If, however, it did not occur to them, ~~I think~~ ^{was} it very probable, that 'arise' indicated a symbolic representation of accent in terms of musical notation. And this representation is not "artificial systematization". It has been done in modern times, with a touch of living reality, by Professors Daniel Jones² and Klinghardt.³

1. The passage may again be quoted from Burnell's Edition of Rktantravyākaraṇa p. XL :-

udātte nisādegāndhārāvanudātte roṣabhadhaivatay
svaritaprabhavā hyete sadjamaadhyamaṇṇamāh.

2. Intonation Curves, and Outline of English Phonetics.

2nd Edition pp. 136 ff.

3. French Intonation.

III. We see then, that Indian Grammarians had observed a living musical phenomenon in Vedic accent and they tried to describe the phenomenon of accent in terms of parallel facts which they had observed in music proper. That this was not an "artificial systematization" but the observation of a living connection between music and accent is further corroborated by the Samhitopanishad Brāhmaṇa according to which, in several chants of the Sāmaveda, the low accent becomes high; e.g. "in the Samhitatext of the Sāmaveda, the syllable 'vī' is marked low, but in the Paraka hymn it is sung very high",¹ while "during a musical series in which the third note was followed by the second, and the second by the first, (3:2:1:) 'the high becomes the highest' (udāttatama) and is designated as udāha"². These facts indicate that our authorities had observed a living connection between accent and music, and that it was not a case of mere "artificial systematization", for the accent varied with different musical conditions. It also seems to have varied with different dialects, as another passage of the same Brāhmaṇa indicates. It refers to certain schools in which the syllable which was pronounced as high in the Lāṅgala School was said to be articulated low in other schools and vice versa.³

1. Burnell's Edition: p. 20 :-

"sarvatrodāttasvānudāttāni" iti

com. ārcikasamhitāyām "vī" varṇo 'udāttah pathitah, sa parkasāmi atīvocair giyate.

2. Ibid. pp. 27-28.

trītiyaprabhrtīnām udāttatamah kascit svaro bhavati taṁ udāha ityācaksate.

3. Ibid. p. 29.

We have unfortunately no means at present of estimating the accuracy of the details regarding the relation of accent to the various notes in the musical scale. And yet these passages strikingly indicate the general view-point of Indian Grammarians regarding accent, showing that by accent they meant predominantly a musical accent. The relation of the Svarita accent to the highest notes in the musical scale, mentioned by the Pāṇinīyā, is another interesting point, which seems to tally with the Rg Prāt.'s observation that the first half-mora of the ^{Svarita} circumflex was higher than the high accent. If the Svarita was the origin of the highest musical notes, its intonation was likely to be high enough to render at least conceivable the extraordinary theory of the Rg Prāt. regarding the Svarita. I say 'extraordinary' because the Vedic Svarita generally arose out of the low accent when the latter was preceded by the high accent. That the succeeding low accent should thereby start higher than even the preceding high accent seems to be an unusual phenomenon. And yet, if the resultant Svarita was observed to be related to the highest musical notes, the high pitch of its starting-point was possibly an actual phenomenon in the Vedic pronunciation noticed by the Rg Prāt. Moreover, the rise of the low tone

1. III.2.3 taśyedāttataredāttād ardhamaṭrārddhameva vā.

By Prof. Daniel Jones, vide his *Englishes* p. 37, where the low tone of 'is' is identical with the high tone preceded by the high-toned particle 'is'.

to the level of the preceding high tone has been actually¹ discovered in Sechuana, an African language, and it is not impossible that the preceding high tone in some languages may be a rising tone, and that rise may be carried into the following syllable. A phenomenon of this kind (as Prof. D. Jones tells me) is found in Norwegian, where the tones are spread over a stressed syllable and one or more unstressed syllables in certain connections.

While the above facts indicate that accent according to Indian Grammarians was predominantly musical, it is not unlikely that some authorities implied by accent a combination of both musical and stress accent. For according to Uvāṭa, Patañjali and Kayyāṭa, breath plays an important part in the production of accent. Thus commenting on the Rg Prāt. III.1., Uvāṭa defines the high accent as that which is due to the upward movement (tension) of vocal organs caused by breath, while the low accent is defined as that which is due to the downward movement (relaxation) of vocal organs caused by² breath. Patañjali does not accept this definition of accent, not because he does not believe in the leading part played by breath in the production of accent, but because ~~Uvāṭa's~~^{the} definition does not give a fixed standard of determining what is high and what is low.

-
2. āyāmo nāma vāyunimittam ūrdhvagamanam gātrānām tenocyate sa udāttah. visrambhe nāmādhogamanam gātrānām vāyunimittam.

1. By Prof. Daniel Jones, vide his Sechuana Reader p.37, where the low tone of 'le' in letsatsi 'sun' becomes high when preceded by the high-toned particle le 'with'.

Thus commenting on Pāṇini I-2-29, I-2-30, Patañjali remarks "High and low do not denote a fixed object: (in other words, they are relative terms). The same sound may be high for one person and low for another person. Thus when a person is reading to another, the hearer may say 'Why are you screaming so high, speak low', while another person may say to the same reader, 'Why are you muttering between your teeth, speak high'. What is extremely high for a man of poor breath may be extremely low for a man of strong breath". High and low being therefore relative terms ^{both} from the standpoints of the hearer and the speaker, Patañjali uses the terms high and low with reference to the various parts of the vocal organs.

1. idam uccāṇicam anavasthitapadārthakam.

tadeva hi kañcitpratyuccair bhavati kañcit prati
nīcāh. evaṁ kañcit kañcid adhiyānamāha kiñuccai
rorāyase'th nīcāir vartatām iti. tadeva tathādhiyānam
apara āha kim antardantakenādīśa uccāirvartatām iti.

2. uccāir vartatām āha anavasthitapadārthakam.

Q. 2. 3. ...

3. I, 2-3 (Pāṇini's edition) ...

...

"In articulating the high accent," as ⁱMayyata¹ says, "the higher part of the articulating organ, by coming into contact with breath, is called into play". According to these authorities, then, it was the particular part of the articulating organs that constituted a fixed standard for determining whether the accent was high or low, and that was the invariable factor of the production of accent. The symbolic representation of the particular accent, according to the Pārisīkṣāṭīkā Yājñabalkya² and the commentary on the Pratijñā Sūtra³, was to be made by a movement of the hand. Thus in the low accent, the right hand was to be placed or moved near the heart; in articulating the high accent, the hand was to be near the head; while in the case of the ^{varita}circumflex, the hand was to be near the ear. But, as I have said, these movements of the hand in the direction of the head, the heart or the ear were symbolic.

1. ekasmin tālvādike sthāne ūrdhvādharabhāgavyukte ūrdhva-
bhāgenocāryamāṇe udāttah, adharabhāganispanno' mudāttah.
Magesa :- ūrdhvabhāgavacchinnavāyusamyogenetyarthah.
2. uccair uparibhāge jātena prayatnenocāryamāṇasodāttah
vyāt. On 99:...evam hastasvarevinyāsam udāttādinām
udāttādisvarānām utpattau karanānyāha. On 81.
3. I.4-6 (Benares Edition) hrd^audāttah hrdayasamīpe daksina-
hastenānudāttapradarśanam bhavatiti bhāvah, etc.,

'high' means the higher part of the vocal organ while 'low' means the lower part of the organ. And

Thus, with reference to these movements of the hand, the *Parisikṣā* points out that the high accent occurs when the effort is directed towards the lower part of the vocal organ. The head, then, represented the upper part, the ear the central or transverse part, and the heart the lowest part of the articulating organ.

This theory, which attributes the accent to the various 'altitudes', if I may use the expression, of the vocal organs, may possibly refer to the raising of the larynx for the high pitch, and its lowering for low pitch, and if it was intended in this sense, it was sound. The reason which led Patañjali to localize the accent in the various altitudes of the vocal organs was the need to determine a fixed standard of accent for all speakers and hearers. There is no doubt that this theory of accent, according to which the high accent proceeds from the highest part of the vocal organ, does not help us to determine whether accent according to Indian Grammarians was decidedly musical or tonic. And yet the fact that Patañjali and Nagesa attribute the high accent to the "higher part of the vocal organs coming in contact with breath"-- this fact indicates that the element of breath-force was not entirely excluded from the Indian Grammarians' view of accent. But the predominance of the musical accent even according to these writers is quite plain. Thus Kayyata, while expounding Patañjali's theory of accent, remarks, "In this way the word 'high' means the higher part of the vocal organ, while 'low' means the lower part of the organ. *These*

cf. footnote on p. 267.

These particular accents can be learnt by practice and should be understood as being like the notes in the musical scale".¹

A comparison with the notes in the musical scale then clearly implies that the Indian Grammarians meant by accent predominantly a musical accent, though probably they did not entirely exclude from it a combination with stress accent. I say only 'probably', because when they attributed the high accent to the breath coming in contact with the higher part of the articulating organ, the mere mention of 'breath' does not necessarily indicate that the resultant accent in their opinion was stress-accent, for the breath-element is not absent from the productive factors of musical accent, just as it is not absent from the musical tones of the human voice.

The *Ārśīkṣāṭīkā Yājñabalkya* holds the 'altitude' theory to be only symbolic and secondary, meant only to help the reciter in the articulation of various accents by the movement of the hand and remarks in this connection:- "In the articulation of the high accent, effort is directed towards the upper part of the vocal organs. In the articulation of the low accent, effort is directed towards the lower part of the vocal organs. After thus describing the play of the hand during the articulation of accents, the author now proceeds to describe the causes of the production of various accents.²

1. evam coccāritya nena ōrdhvabhāgo grhyate nīcāritya-
dharabhāgaḥ. abhyāsaḥ adhigamya cāyam svaraviśeṣaḥ
sadīdīvad vīñevah. ² cf. footnote on p. 267.

"These causes are:- in the case of high accent, tension (lit. 'length') of the organs, firmness of the voice, and narrowness of the cavity of the throat: in the case of low accent, looseness (lit. 'shortness') of the organs, weakness (lit. 'gentleness') of the voice, and wideness of the cavity of the throat." ¹ The same theory has been advanced in the Taitt. Prāt. XXII.9 which has been also quoted by Patañjali on Pāṇ. I.2-29-30. I think that two of the conditions mentioned in this theory, viz. tension of the organs and firmness of the voice, would be common both to stress and musical accent, but the second condition, viz. narrowness of the cavity of the throat in the case of high accent, and its wideness in the case of low accent, would have been impossible if only stress-accent had been intended, for a high accent, if expiratory, would have required a copious emission of breath and consequently a widening, and not narrowing, of the cavity of the throat. Even this passage, then, indicates that musical accent was predominantly intended, though the other ^{two} conditions mentioned do not exclude the possibility of stress-accent.

1. yad gātradairghyam drdhatā ca yā dhvaneh
tathānutā kanthabilasya yā ca
etāni kurvanti ca śabdān uccair

yaddhrasvatā yā mrdutā svarasya
yā
yā vistratā kanthabilasya caitāh
ka
karāni śabdān nihatān ca nityam

Pāṇi
8/82

Prof. D. Jones tells us that modern teachers on singing often advise their pupils to "make their voice issue between the nose and the mouth". According to Sir E.D. Ross "I possibly meant a change from the "open" to the "closed" notes, in which the voice is presumably placed at the back of the nose.

The Pārisikaṭīkā Yājñabhūṣana therefore rightly interprets the 'Altitude' theory to be only symbolic, (though it ^{may} ~~might~~ have a ^a natural basis, for people have generally the tendency to raise their head for a high note, and to lower it for a low note), the movement of the hand in the direction of various organs being only an accessory help to the reciter. In addition to this accessory movement of the hand, the Cārāyaṇīya Śikṣā also mentions the movement of the eye, and remarks, "One should always articulate accent properly, indicating the direction of the accent by a movement of the hand. In the case of high accent one should cast a contracted glance of the right eye on the junction between the nose, the cheeks and the eyebrows."¹ ~~In my opinion,~~ These secondary movements of accessory organs, like the movements of a musical conductor's stick, ^{may} ~~might~~ have offered something like a fixed standard for the regulation of accent in Vedic recitals, but the Pārisikaṭīkā is right in interpreting that neither these accessory movements nor the various altitudes of the vocal organs were the causes of accent, and if Patañjali's fixed standard be taken in this restricted sense of accessory guidance, his theory may be accepted, though it does not help us to determine the essential nature of Vedic accent.

1. MS Göttingen: Fol. 6. śaman svaram pathen nityam
mārgam haste pradarsayet, yadbānī gacchati sthānam tadāhastena
pradarsayet. daksināksinipātena dr̥ṣṭim hanyāt kaniyāsīm
nāsāgandabhruvoḥ sandhim udāttavisaye viduḥ.

Prof. D. Jones tells me that modern teachers on singing often advise their pupils to "make their voice issue between the eyes". According to Sir E.D. Ross it possibly meant a change from the "open" to the "covered" note, in which the voice is presumably placed at the back of the nose.

Accent and Quantity.

The Āraṇya Śikṣā mentions an interesting theory, according to which "the final syllable of a word has the low accent, if the penultimate is long; but it has the high accent, if the penultimate is short." The Śikṣā, however, refuses to accept the theory as a general principle.

The passage, in which this theory has been mentioned, first enumerates words in the Taittirīya Āraṇyaka which end in two syllables with a high accent e.g. avalumpátú which occurs in X.24.1, X.25.1. The normal accent of the word should have been only on the penult, thus avalumpātu.

1. manu "áhas tād avalumpátú" "rātris tādavalumpátú"
iti vākyadvayasya śrutivākyatvād evādyāntodāttat-
ve siddhe punaratra grahaṇam vyartham iti cet,
satyam śrutivākyasyāntodāttatva-niyame' pyudātta-
dvayāntaniyamābhāvena tan-niyamārtham atra
grahaṇam. laghūpāntyaśrutivākyasya tanniyama
iti cet tīlāḥ kṛṣṇā ityādaḥ vyabhiçārena tan-niya-
mābhāvāt "upāntyaśtu guruḥ syāccen nihaṭam tatra
ceṣyate, laghuścettad udāttam syāccchutivākyesu manyā-
te" iti vacasya prāyikatva-tātparyād iti Com. on 27.

But an objector here suggests that an enumeration of such words is unnecessary, for "the high accent of the final syllable tū could be explained by the general principle that with a short penultimate (as pā in the above example) the final syllable has the high accent". The Sikṣā, however, states that this phenomenon often occurs, but it cannot be accepted as a general principle, for "it is contradicted by such examples as 'tīlāh, kṛāṇāh'".

The Sikṣā is right in asserting that the correspondence long penultimate: unaccented final, short penultimate, accented final, often occurs in Vedic words. This is true of words like the following:-

Long penultimate. Short penultimate.

devēna

pītā

dēva

pītūh

kāmāh

padā

devēbhīh

padē

vāri

prajā

sātrūh

purū

yaज्ञāsya

trāṇi

vācam

āyam

gātvā

1. The Indo-germanic accent in Sanskrit 2nd ed. 1913.

pp. 212 foll.

And the Śikaṇ is also right in maintaining that the theory is untenable if it is accepted as a general principle, as the following counter-examples will show:-

Long penultimate

agninpitṛāpitṛékr̥nāḥkumārāḥrudrāḥsakhyuhsvargāḥ

Short penultimate

agnināagnayegātingātinsvāsuḥsādahjāgatjīvā

It is not unlikely, however, that the theory in question refers to a later stage in the development of the Sanskrit tone accent, when it was converted into a stress-accent.

The quantity of the penultimate syllable seems to have played some part in the development of this stress-accent, although, as has been rightly pointed out by Prof. Turner, the opinion that Prākṛit stress depended on the quantity of the penultimate syllable can not be accepted as a general principle for all Prākṛits.

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1. The Indo-germanic accent in Marathi JRAS 1916, pp. 212 foll.

Again, the Taittirīya quotes another interesting theory from a Śikṣā, according to which the penultimate of a word, if it is long, becomes stressed e.g. Skr. kācā = Prākṛit kacca; Skr. tailā = Prākṛit tella. It is not unlikely, then, that the theory mentioned by the Śikṣā refers to the stress-accent of the penultimate which ^{may} ~~might~~ have left the final syllable with a weak expiratory accent. Again, the examples quoted by the Śikṣā from the Taittirīya Āraṇyaka are also interesting; the two high accents, as in avalumpātú probably refer to the development of the secondary accent which has been noticed in the later stages of Sanskrit and Prākṛit.

¹ ~~X~~ Ibid. p. 240.

Again, the Vaidikābharara quotes another interesting theory from a Śikṣā, according to which the quantity of a "Svarita-receiving consonant" was lengthened. It states that "the beginning of Svarita is like the high accent, but the end is like the low accent. This second stage (i.e. the low accent), however, sometimes does not occur in vowels, but only in the consonants which are adjuncts to those vowels, and these consonants are called 'Svarita-receiving'. They can not then be pronounced without a longer duration".

On
Taitt. Prāt. I-37

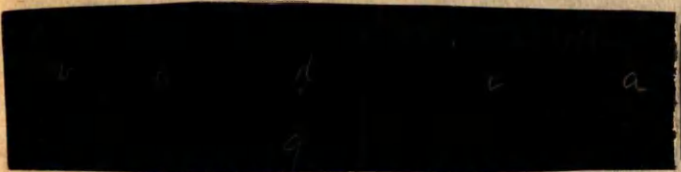
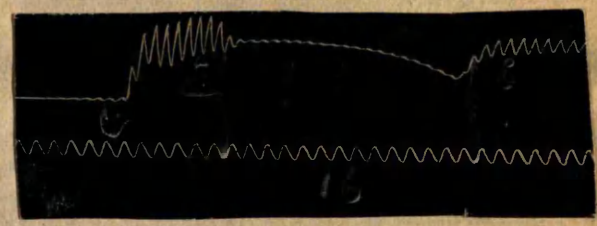
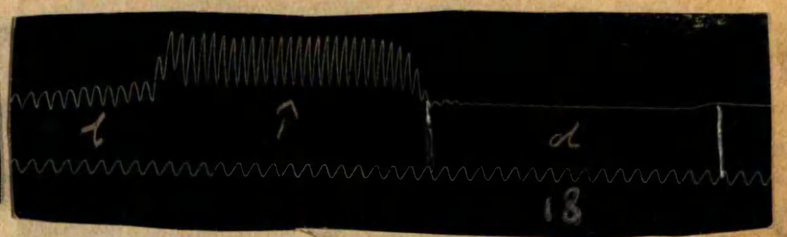
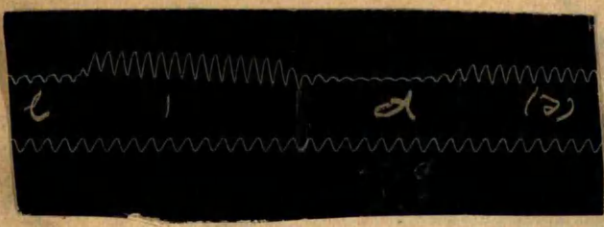
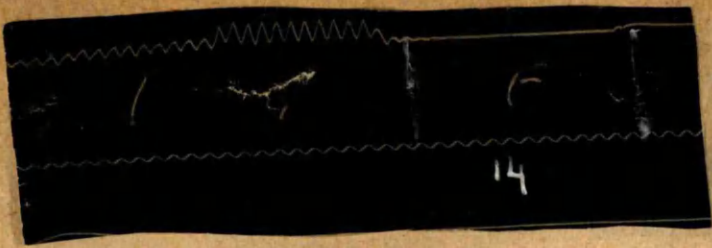
svarita-grāhinām vyañjanānām kālādhikyam

Uktam śikṣāyām:-

svārāḥ kampāśca raṅgāśca ye yatkalāḥ svabhāvataḥ
vardhante procyamānās te kṣiprayatne'pi yaktari.
atra svaritēnām kālavṛddhi-vacanam tadgrāhi-vyañ-
janārthanveva tad anudāttasamatvam kṣuṇḍit-
svaritasvareṣu na bhavati kintu tadāṅgabhūteṣu
vyañjanasveva tāni svaritagrāhinīṇi ucyante.
Teṣāṃ kālādhikyam vinocāraṇam na ghatate.

This was a remarkable observation, and very probably accurate. For by the author's own statement, the Svarita was a high-falling tone. Now it has been noticed by modern phoneticians (as I learn from Prof. Daniel Jones) that a lengthening of the following consonant sometimes accompanies a high tone in English when that high tone is used for emphasis e.g. 'n' in splendid, tremendous, and 't' in a little. My own pronunciation seems to illustrate a similar phenomenon. As the Kymograph tracings on page 278 will show, the quantity of the consonants d and t in the Lahndi words lit and lid, pronounced with a high-falling tone, was appreciably longer than in the case of lit and lid (ə) which were pronounced with a low monotone. The average length of d and t in the former case was 17.3 and 16.7, and in the latter case 9.12 and 13.7 th hundreds of seconds respectively.

But this observation regarding the lengthening of the consonant does not seem to be confirmed in the case of consonants after the high-falling tone of Lahndi as a word - accent. For, as the Kymograph tracings on page 278 will show, the ^{average} length of the consonant after the high-falling tone in baggi ('carriage') and vadia ('cut') was even shorter than in the case of baggi ('white') and vadia ('O great one!') the average length of g and d in the former case being 15.8 and 9.1, and in the latter case 16.3 and 13.2 respectively. The phenomenon, however, seems to be true of consonants following the high-falling tone of sentence accent used for emphasis.



Quantity_x

The idea underlying the grouping of sounds into short, long and pluta was said to be duration. As the Pāṇiniya Śikṣā says, "Short, long and over-long ('pluta') are determined by time." ¹ From the standpoint of duration, human speech was said to be of three kinds, viz. quick, intermediate and slow. According to Kaiyaṣa, ² the quantity of sound in intermediate speech was one-third more than in quick speech, the ratio being 9:12. The quantity of sound in slow speech was one-third more than in intermediate speech, the ratio being 12:16. Kaiyaṣa connects the perception of this ratio with a psycho-physical process affecting the nervous system of the hearer. The ratio 12:9 implied that "12 drops of the nervous fluid flow from the Sūṣūmā nerve of the hearer when he hears intermediate speech, while the number of drops in the case of quick speech is 9."

As regards the exact ratio of quantity between these three kinds of speech, authorities naturally differed. Thus, while Kaiyaṣa states the proportion to be 9:12:16, the Rktantra Vyākaraṇa ³ maintains the proportion 3:4:5, while Uvaṣa ⁴ mentions some authorities holding the proportion 16:20:25. According to the Māṇḍūkī Śikṣā ⁵ the interval

¹ S' S p. 379.

hrasvo dīrghaḥ pluta iti kālato niyamā aci.

² On Pāṇini I.1.70.

drutaṃ s'lokaṃ roṇaṃ vocārayati vaktari nāṇikāyā
yasyā navapāṇīyaphalāni śravanti tasyā eva madhya-
nāyāṃ vṛttau dvādaśa phalāni śravanti.

³ p. 10 drutāyāṃ mātṛā trikalā, catuṣkalā madhya-nāyāṃ,
pañcakaḷā vilambitāyāṃ.

⁴ On Rg Praṭ XIII.16.

⁵ S' S p. 463 madhyamaikāntarā vṛttir dvyantārā hi vilambitā.

between a series of intermediate sounds was one more than in quick sounds, while the interval between a series of slow sounds was "two more than in quick sounds, the proportion being 1:2:3."

It is difficult to judge how far the above ratios of duration were accurate. I have consulted in this connection a leading authority on shorthand, Principal Holland (of the Pitman's School, London), and he informs me that "either the maximum or the minimum rate of speech would be difficult to ascertain, as speech is an individual matter..... Roughly, one can say that the average rate of speaking in ordinary conversation is round about 140 words per minute. Lecturers vary from 180 up to 200, the latter rate being for short spurts only." Now if a ratio of duration be taken from these figures, it would roughly vary between 2:3 (i.e. $\frac{140 \times 60}{200} : 60$) and 13:18 (i.e. $\frac{140 \times 60}{180} : 60$) for quick and intermediate speech respectively. The former ratio would then nearly approach Kaiyyāta's (9:12), while the latter would roughly approach the results given by Uvāṭa's authorities (16:20). These figures, then, indicate that the calculations of Indian Grammarians were not mere fanciful, but were based upon considerable observation.

Our grammarians prescribed the use of these three kinds of speech under different conditions. Thus according to Ṛg Prāt,¹ "quick speech should be used in Vedic recitals, intermediate in business, and slow during instruction." The Māpikī S'ikṣā² recommends the use of intermediate speech for "in slow speech defects can be easily detected, while in quick speech sounds are indistinct. But a well-educated teacher gifted with a good voice

1 V. 21.

2 S' S p. 463.

may use any of these three forms of speech."

So when the question of fixing a standard of quantity arose, the basis selected was intermediate speech. Thus the *Kālanirṇāya Śikṣā*, a manuscript work exclusively devoted to quantity, states in this connection that "we cannot speak of time as being uniform in the case of vowels, consonants and the pause in all the various kinds of speech. This treatise (on duration) is based on intermediate speech, for other kinds of speech have been prohibited by the *Prātisākhya*."¹ It is evident that intermediate speech, which presumably represented ordinary conversation, was the only practical basis for the definite determination of quantity.²

Quantity independent of quality.

Patañjali maintained that quantity did not affect the quality of a sound. For, as Kaiyaṭa explains it, when a pot is perceived again and again, it does not appear to be different. It is the same pot, and is perceived to be the same pot, in spite of our observation for a short or a long time. Duration does not affect its identity. In the same way, a sound, say the vowel *a*, is not really affected by duration, though apparently it is. "In slow speech *a* is repeatedly heard but it is the same *a* and is perceived as the same *a*." This appears to be a piece of ingenious subtlety,

1. svaraṇṭarā-*virāṇṭarā* bhinnayāg-vṛttivarttinām
aika-rūpyeṇa kālasya kathanam nopapadyate. 3.
madhyamāṇa vṛttināṇāṃ mayā cayan kṛtā kṛtā
prātisākhya nīśidhyāṇya yasmāt saiva bodhyate. 4.

2. Cf. Sievers, *Phonetik*, 5th Edition, p.257, where he defines "the natural quantity of a short sound as the minimum time required for the distinct articulation of an accented syllable in intermediate speech (bei mittlem Redetempo)."

by which Kaiyyāṭa conceives of a comparatively long \bar{a} as if made up of a series of short a 's, and if he seriously meant it, he was wrong, for a breach in the continuity of a long vowel has no phonetic basis. But, as the succeeding paragraphs will show, it does not seem that he really meant it, for he, with all Indian Grammarians, believes in sound to be ultimately indivisible.

Again, continues Kaiyyāṭa, a drum-beat is heard, sometimes for a short time, sometimes for a long time, and sometimes for a very long time, but it is the same drum-beat. It is like three persons starting on a journey: one goes in a car, another on a horse, and the third on foot, ^{modes of progression} ~~vehicles~~ which are respectively quick, slow, and very slow. But the road by which they proceed on their journey is the same throughout. The road, being the substratum, is not affected by duration. It is the same for all the three. "From this standpoint sound has two aspects, apparent and real (vaikṛta and prākṛta). Apparent sound is affected by duration, and we then call it short, long and pluta. Real sound is Spṛṣṭa, an indivisible, sonorous whole, and is not affected by duration."¹

1 On Pāṇini I.1.70 ghaṭaḥ punaḥ punar dr̥ṣyānōpi na bheḍam
avalambate, tathā vilambitāyāṃ vṛttāvākār eva punaḥ punarupala-
bhyata iti vṛttibhede'pi varṇasya bheḍo na gṛhyata iti sarvavṛtti-
ḥ tatkalatvam. hrasvādīṅha-plutās tu svṛata eva bhinnābhinnair
dhvanibhir vyajyanta iti teṣāṃ kālabhedaḥ. yathā prayatnavasāḍ
utpanno bherīśabdāḥ kaścid alpakālam upalabhyate kaścio cirap
kaścio ciratareṇ ca, evaṃ vṛttiḥ upalabdhinā kālabhede varṇasya
tvābheda eva, tanvādhvānāḥ rathika āśu gacchaty āśvikaś cirap
padātis ciratareṇa.....
evaṃ tarhi spṛṣṭaḥ śabdo dhvaniḥ śabdaguṇaḥ. "varṇasya grahaṇe
hetuḥ prākṛto dhvanirīgyate vṛttibhede nimittatvam vaikṛtaḥ
pratipadyate."

What, then, is the function of the individual sounds which constitute a word? Each individual sound, says Bhartrhari, creates an impression (lit. "seed") in the human mind which is able (lit. "mature") to perceive the word when the last sound has been heard. In other words, the mind receives the impressions of individual sounds, but it is only the last sound with the cumulative effect of the previous impressions that enables the mind to perceive the word. Individual sounds, then, are only a means to an end - viz. the manifestation of the really indivisible whole, - the word, technically called "Sphoṭa." "It is this Sphoṭa that is the sole reality in linguistics; the parts, viz. the individual sounds, have only an illusive existence."

The above discussion shows that Kaiyaṭa did not really maintain the breach of continuity of individual sounds. When therefore he speaks of a long ā as a repetition of several short ā's, he only resorts to imagery in order to support his thesis that the quality of a sound is not affected by its quantity. This is further corroborated by the fact that Patañjali strongly maintains the continuity of sounds when coming in immediate contact with other sounds. There is no doubt, says Patañjali, that time is a necessary element in the pronunciation of every group of sounds and that no two sounds can be simultaneously uttered by the same speaker. As Nāgeśa² illustrates it, utterance of different sounds, like the

1 Vākyapadīya I. 85-86.

nādaīrāhitabījāyān antyena dhvaninā saha, āvṛttaparipākāyāp
buddhau śabdo'vadhāryate. asataspāntarāle yān cchabdān
astitī ganyate, pratipattur asaktiḥ sā grahapopāya eva sah.

2 On Pāṇini I. 4. 109:-

vastuto yatnāyauṅgapadyam eva narttakya nānāvaya vāvacchinna-
kriyān kṣaṇabhedaṇaiva kālasevyaḥ syāt tu tadāgraha ityāśayaḥ.

various organic movements of a dancer, can not be simultaneous. In sounds as well as in the dancer's movements, "there is always a sequence of different movements, although this time-element, owing to its minuteness, is not perceived." But, says Patañjali, sequence does not affect the continuity of sounds. Two sounds, when uttered one after the other, have a contiguity (saphita) whether they are pronounced in quick, intermediate or slow speech. Continuity of sounds is not confined only to quick speech. The relative proximity of two sounds is therefore the same in all the three varieties of speech. For, continues Patañjali, contiguity here means that the continuity of the sounds is not broken, though their perceptibility in time may differ.¹ For instance, the contact of an elephant with another, or the contact of a mosquito with another, is the same, relatively speaking, although the space which their bodies occupy is different. But "the difference of space does not affect the degree of continuity or proximity which the elephant and the mosquito have to their fellow beings."²

In connection with his theory of the continuity of two sounds Patañjali makes a very interesting observation. He states that the proximity of two sounds also implies the continuity of voice. Thus a breathed intervocalic consonant is slightly vocalized under the influence of the two adjacent

1 tulyaḥ saṃnikarṇo varpānāḥ drutamadhyamavilambitāsu vṛttiṣu. kiṃ-kṛtas tarhi viśeṣaḥ, varpānāḥ tu kāla-bhūyastvam.

2 Kaiyaṭa on Pāṇini I-4-100.

hastino hastinā yaḥ saṃnikarṇo naśakasya naśakena sa tulyaḥ parasparāpekṣayetyarthah. hastināu mahāntam deśam vyāpnuto naśakau tu svalpam. nairantaryam tv anavaśiṣṭam ity arthah.

vowels, e.g. g in pacatī is affected (lit. covered) with the voiced sound from the two adjacent vowels, just as a white cloth placed between two red pieces of cloth appears to acquire their quality of redness."¹ This remarkable observation of a living phenomenon, so conspicuously reflected in Sanskrit and Prākṛit, indicates that it had come to the notice of our Grammarians as early as the 3rd Century B.C., and shows how wonderfully accurate their observation was.

To sum up, then, Patañjali's theory of quantity gives us two main principles (1) rate of speech does not affect continuity; (2) quantity is independent of quality. The first principle, within certain limits seems to be valid. There is no doubt that quantity often modifies the syllabic division of words, but this does not necessarily effect a break in the chain of connected speech. And Patañjali is on the whole right in observing that continuity is not broken even in slow speech, if he refers only to normal and unaffected speech. The first principle therefore indicates that the infinitesimal pause which he mentions as occurring between two individual sounds (see page 232) was only a phantasy, and that he did not actually believe in it. Kaṣṣyaṭa's explanation that a long ā appears to be a repetition of several a's, if strictly taken, would be inconsistent with this principle of continuity: the statement, however, was presumably an attempt to explain symbolically the sequence during the process of a long quantity, which modern Science describes in terms of vibrations.

1 On Pāṇini I-4-109 hrādāvirāmaḥ saṁhitā atha yatraikāḥ pacaty ekāḥ pūrvāparayor hrādena praocchādyate (com. dvayor akārayor ghoṣavator madhye cakāro ghoṣavān iva lakṣyata ity arthah.) tad yathā dvayo raktayor vastrayor madhye sūkṣmā vastram tadguṇam upalabhyate.

Patañjali's second principle, viz. that the quantity of a sound is independent of its quality, is evidently indisputable. But Patañjali's statement is very suggestive, and opens up a great subject for inquiry, viz. whether our Grammarians' classification of the so-called long and short vowels was actually based on a quantitative or a qualitative difference. The treatment of the co-ordinate vowels in the Prātisākhya¹ is straightforward; they speak of the long and the short vowels as saṁānākṣara - simple vowels, based on quantitative difference - or savarṇa (lit. "of the same colour"), with the same place of origin and way of articulation. But, as is well-known, both Pāṇini² and the Vāj. Prāt. pointed out the fact that short a was "close", and that to regard it as the short of long ā was only conventional. The commentary on the Vāj. Prāt.³ states in this connection that "a qualitative similarity between a which is close, and ā which is open, is not possible, but they are treated as if they are qualitatively similar." Our Grammarians then tacitly admit that their classification of the so-called short and long vowels ^{had} ~~was~~ at least partly based ~~on~~ a qualitative difference, though they ignored it for grammatical purpose.

1 Rg Prāt. I-11, Vāj. Prāt. I-43, 44; Taitt. Prāt. I-2-3.

2 VIII.4.68.

3 I-78.

saṁvṛtāsyaprayatnaḥ starayoḥ ca vivṛtāsyaprayatna-
yoḥ dvimātrika-trimātrikayoḥ sāvarṇyaḥ tulyaḥ na
sambhavatīti savarṇavaś ca kāryaḥ bhavatī.

As regards the relation between vocalic quality and quantity, our Grammarians are on the whole silent. Only a single line occurs in the Pāṇinīya Śikṣā that "a close sound has one mora, but an open sound has two moras."¹ It is not certain whether the author here confuses a close vowel with a short quantity or whether he refers to an actual pronunciation in which close vowels were short. The latter case was possible in some dialects. This connection between quality and quantity in many languages is recognised by modern phoneticians. My own pronunciation of the Lāṅhdi vowels shows the same phenomenon, viz., a longer quantity in the case of open vowels, but shorter in the case of close vowels in similar situations. Thus, as the Kymograph tracings on page 288 will show, the average duration of the open short vowel a in chaṭ was 10.10, but of the closer vowels i and u in chit and chut was 8.6 and 9.7 hundredths of seconds respectively. Again, the average duration of the open long vowel ā in rās was 30.9, but of the closer vowels ī and ū in rīs and rūs was 19 and 26.3 hundredths of seconds respectively. The quantity of open and close sounds must have of course varied with different dialects, as it does in English, French and German.³

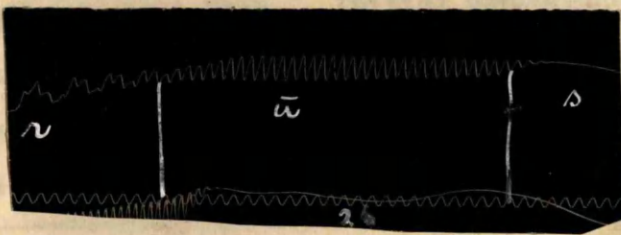
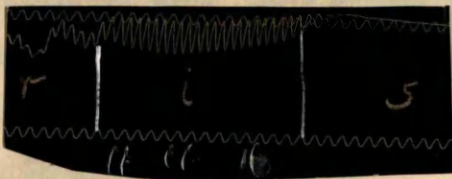
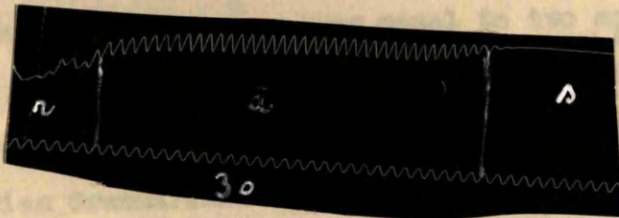
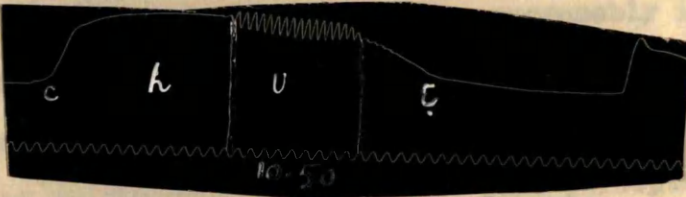
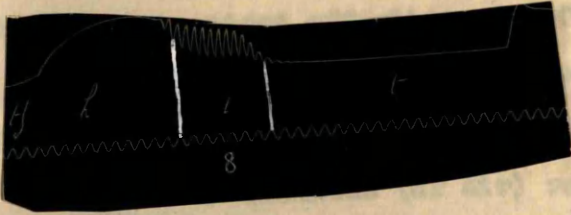
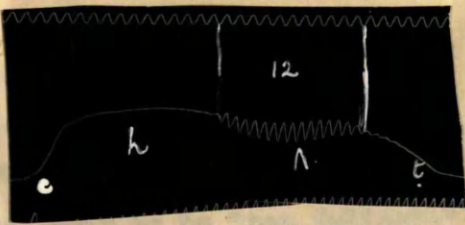
¹ (See after next note)

*2 Cf. Jespersen: Lehrbuch der Phonetik, p.161. From Meyer's measurements of English and German vowels Jespersen concludes that it is a general rule in language that close vowels are shorter than open vowels in similar situations.

*1 88 p.360 samvṛtaṃ mātṛikaṃ jñeyam vivṛtaṃ tu dvimātrakaṃ.

3 Daniel Jones: Outline of English Phonetics, 2nd Edition p.104.

Roudet: Éléments de Phonetique Générale, p.334.



Standards of quantity.

The minimum standard of quantity was called apu, which, however, was said to be "too delicate" for perception.¹ Thus the quantity of the voiced off-glide of a final voiced consonant was said to measure an apu,² which "could not be described" in terms of any other standard. The Lonasi Sīkṣā compares the apu to a "particle (of air) reflecting the sun's rays,"³ the spatial comparison being presumably intended to convey an idea of its delicate nature.

Next to this imperceptible scale, came a standard which, according to the Vyāsa Sīkṣā,⁴ was "just perceptible." This was called "paramānu",⁵ being equal to two apus, e.g. a consonant was generally measured as a paramānu or half-mora. This is another significant example of the unimportant position that Indian Grammarians ascribed to consonants, which, according to this standard, were "just perceptible." There were perhaps phonetic grounds for this view; for final consonants in Sanskrit were incompletely articulated and eventually disappeared; while intervocalic consonants also, to a great extent, met the same fate. Initial consonants, if members of a group, generally belonged to the preceding syllable in connected speech, and as in this case their quantity increased, they were said to be doubled, their quantity then becoming a

1 Sāmbhu Sīkṣā, 46.

indriyāviṣayo yo (a)sāv apur ity ucyate budhaiḥ.

Vyāsa Sīkṣā kālō'ti sūksmakō'puḥ syāt XXVII-8.

2 of. Uvaṣa on Rg Prāt. VI.11.

3 88 p.468 sūryarāśmipratīkāśā kapikā yatra dṛṣyate.

4 mātrārthan vyaktamātrakan XXVII-8.

5 Vāj. Prāt. I-61. paramāpvardhanātrā.

full mora according to this standard. But it is hardly likely that the quantity of an initial consonant when followed by a vowel was always "just perceptible".

Next to the paramānu came the standard actually current, viz. the mātrā or the mora. The quantity of a mora was analogically described in several ways. It was compared by the Vyāsa Śikṣā¹ to a snap of the finger, by the Nārada Śikṣā² to a twinkling of the eye, by some authorities³ to a flash of lightning, and by the Rg Prāt.⁴ to "a note of the woodcock." In the absence of delicate instruments, these comparisons served as useful guides, though the "flash of lightning" was too quick for a mora - the quantity of the short vowel.

Next to the mora, came the two-mora standard - the quantity of the long vowel - and was compared to the cawing of the crow, while the three-mora standard - that of the ultra-long or "pluta" vowel - was compared to the "note of the peacock".⁵ These comparisons also were evidently only rough conventional guides, otherwise it was hardly likely that the duration of the pluta in connected human speech could be actually so long as the note of the peacock.

The current practical standard of quantity, then, was the mora, and was sub-divided into four parts, called the four anus. The Gārāyaṇīya Śikṣā⁶ gives a curious physiological correspondence

1. XVII-3. aṅgulīphoṭanaṃ yāvaṃ tāvaṃ kālas tu mātrikaḥ.

2. 88 p. 438. nimajjakālā mātrā syād vidyut kāleti cāpare.

3. I bid.

4. XIII-20. cāpas tu vadate mātrām.

5. Rg Prāt. XIII-30.

6. MS Göttingen, Folio 7b. hrdayasthaṃ maṇḍalaṃ vidyāt kaṇṭhe
vidyād dvirāpavaṃ, trirāpavaṃ tu jihvāgre viṣṭaṃ mātrikaṃ
bhavet.

of these anus. The seat of one anu, called the Maṇḍala, was in the heart, that of two anus, called the dvirāpava was in the throat, while that of three anus was on the front of the tongue, while the mora was physiologically spoken of as being "diffused". Was it mere phantasy, or has it some actual basis? Perhaps it symbolically represents a feeling of upward diffusion when a comparatively long sound is pronounced, the sound seeming to traverse a wider area and towards the higher vocal organs.

two longs = one long). The number (of moras) of the fricative

Rules of quantity. to that of a long vowel: half of its

The rules of quantity, according to the Kālanirṇaya Sīkṣā, were of three kinds, viz. "(1) those relating to vowels ('indivisible sounds'), (2) consonants ('adjunct sounds') and (3) the pause".¹

There was another item, however, the quantity of which has been copiously dealt with in Indian grammatical works, viz. the Anusvāra: the author presumably included it among either vowels or consonants.

long vowel. Unhappily the author does not give any

Quantity of vowels. but some of the Sīkṣas give examples of

Quantity of vowels. fully long vowel. Thus the Kālanirṇaya Sīkṣā

Vowels were classified as short, half-long, long and ultra-long (pluta or vyādha). Of these four, the half-long or ksipra deserves particular notice, as it is interesting to note that the various gradations of vowels, mentioned by modern phoneticians, did not entirely miss the observation of our

1 akhaṇḍa-varṇa-viṣayo varṇāṃśa-viṣayo' pi ca, virāṇa-viṣayas'
oeti trividhaḥ kāla ucyate.² com. akhaṇḍa-varṇaḥ
svaraḥ anagatvāt varṇāṃśa-viṣayo vyajjana-viṣayaḥ.

2 cf. Vyākṣa Sīkṣā (quoted on page) āṇāḥ sphaṭanāḥ vāṇāḥ
tāṇāḥ kālaḥ tu mātrikaḥ.

Grammarians. The term 'ksipra' 'quick' occurs in a passage in the Pārāsārī Śikṣā, in which the ksipra is spoken of as a variety of the long vowel, its quantity being one-half of that vowel. The whole passage may be translated as follows:- "The ksipra variety of the long vowel is said to be an interval (of a snap¹?) of the finger: the ksipra has one-half the quantity of the long vowel. A long vowel can not be further lengthened (presumably referring to Sandhi rules, in which two longs = one long). The number (of moras) of the fricative is said to be equal to that of a long vowel: half of its quantity should be taken as the ksipra".²

The quantity attributed to the ksipra, however, seems to be contradictory: for it may be confused with that of a short vowel, which also was measured as one-half the quantity of a long vowel. Thus in another verse in the same passage the author says, "With a mora added, the vowel becomes long, with a mora reduced, the vowel becomes short (hrasva). Know this to be the quantity of a vowel (lit. syllable). The ksipra is a long vowel".³ Unfortunately the author does not give any examples of ksipra: but some of the Śikṣās give examples of what they call "slightly long vowel." Thus the Kesavī Śikṣā

1 of. Vyāsa Śikṣā (quoted on page 290) an̄gulīphoṭanaṃ yāvān tāvān kālas tu nātrikaḥ.

2 88 p. 55. ksipraṃ dīrghaṃ sanākyātaṃ an̄gulyāṃ ekaṃ antaraṃ, dīrghaṣyārdhaṃ bhavet ksipraṃ nāsti dīrghasya dīrghatā, yathā san̄khyā tu dīrghasya tathā coṃā prakīrtitā ūṣnā dīrghaṃ sanatvaṃ ca ksipraṃ kuryāt tad ardhakaṃ.

3 88 p. 55. nātrā(?) saha bhaved dīrghaṃ hrasvaṃ nātrāṃ vinā bhavet, ityakparaṃ vijānīyāt ksipraṃ dīrghaṃ bhaved iti.

states that in connected Vedic texts (Saṃhitāpāṭha) of the Vājasaneyi Saṃhitā "a short vowel is pronounced slightly long. Thus the i in iṣe tvorjé, the short a's in vāyāvastha devāh, the i in pasūn pāhi will be pronounced slightly long." But when the short vowels are followed by a syllable containing a long ā, they are not lengthened, e.g. "the a and i of savitā, and a (in ja) of Yajamānasya are not lengthened".¹ The non-lengthening of the vowels before long ā possibly implies the effect of stress on the succeeding syllable, a phenomenon which has not been specifically mentioned by Indian grammarians. According to the Pratiśākhā Sūtra, however, which this Śikṣā professedly follows, only the a of an initial syllable was slightly lengthened; thus the short a's of the initial syllables vā and pa in vāsoḥ pavitram were slightly lengthened, but not the short vowels in vāyāvastha, as they did not belong to an initial syllable.²

Again, the manuscript work the Pārisiṣṭikā Yājñabalkya points out that a short vowel should be pronounced like a long vowel in the Kampa accent (a form of Svarita when it was depressed before another Svarita or Udātta) as in pitṛdevatyāṃ hyetāt, where the final ā of pitṛdevatyāṃ was to be pronounced "like a long vowel" before the succeeding Svarita. Perhaps here also a half-long vowel was intended.

1 SS pp.147-148. hrasvam kimcid dīrgham halyutākāre halvisar-gayugvarpe ca na saṃhitāyām.

2 III-5. pādyasya saṃyuktākārasyeṣad dīrghatā ca bhavati.
cf. the modern tendency in Nepali to lengthen initial short vowels (according to a private communication from Prof. Turner).

3 sa kampa evātra yathāhi dīrgham tathoccareḍ dhrasvamapi prakampe. 113.

The ultra-long vowel was usually called "pluta", a term which the Vaidikābharapa¹ etymologically explains as that which "like an arrow, is far-reaching", presumably from plu to "jump". Another term, vr̥ddha,² has also been used, though a few manuscript works point out a distinction between vr̥ddha and pluta. Thus the Hrasvadiṅghaplutamātrālakṣaṇa (a manuscript treatise on the moras of vowels) says "A short vowel with two moras added is called pluta, but a long vowel with a mora added is called vr̥ddha."³ This distinction was interesting; for the ultra-long vowel arose from the long or the short vowel in various contexts: no Sanskrit word with an original ultra-long vowel has been met with. So when a short vowel became ultra-long, it was aptly called "pluta", "having jumped" - owing to the abrupt change that it underwent. But when a long vowel became ultra-long, it was called only "vr̥ddha" "increased", the change being comparatively graduated. The quantity of pluta was said to be three moras, but the quantity of the pluta diphthongs ai and au, according to Patañjali, was four moras. The passage, in which his view on this point occurs, starts with an interesting and suggestive discussion on Pāṇini VII-2-106, according to which the second

1. On Taitt Prāt. I-36.

sarādivad dūragamitvāt pluta ityucyate.

2. Rktañtra-Vyākaraṇa II-44. tisro vr̥ddham

Lonasī Śikṣā ŚŚ p. 456. hrasvan diṅgham tathā vr̥ddham
abhihitam tu samagāh.

3. hrasvan dvimātrāsanyuktaṁ plutam āhur manīṣipah, diṅgham tu
nātrāsanyogād vr̥ddham ity abhidhiyate. Verse 1.

Similarly Cārāyapiya Śikṣā, Fol. 6.

hrasvan dvimātrāsanyuktaṁ plutam āhur manīṣipah, vr̥ddhas
trimātram evāpi vyāñjane tvardhamātrake.

element of ai and au was "pluta". Here an objector states the opinion, attributed to Sakatāyana,¹ that both the elements of the diphthongs ai and au were equal, being one mora each. Therefore, says the objector, when ai and au become pluta, "both their elements should uniformly increase in quantity, just as all the limbs of a child grow (uniformly) in the mother's womb."² Patañjali, however, does not accept this opinion; he seems to follow the opinion, expressed by the Ṛg Prāt.³ and the Pāṇinīya Śikṣā,⁴ that the second element of the diphthongs ai and au was longer. On the basis of this opinion, he takes Pāṇini literally, and states that the second elements "i and u of these diphthongs being pluta, the diphthongs ai and au (including one mora of a) have four moras each." Kātyāyana,⁵ however, does not seem to take Pāṇini so literally.

1 As mentioned by Ṛg Prāt. XIII.16:- sandhyasvako 'rdham ikāra
uttaram yujorukāra iti Śakatāyanah. cf. Kālanirṇaya
Śikṣā:- 6. aikāraukārayor ādāv akāro 'py ekanātrakah
ivarnovarnayoh śeṣau bhavethāmi atha mātrakaḥ.

2 imāv ecau sanāhāravarṇau mātrāvarṇasya mātrevarṇopavarṇayor
iti tayoh pluta ucyamāna ubhaya-vivṛddih prāpnoti.
tadyathā, abhivardhanāno garbhaḥ sarvāṅgapariyūpo
vardhate.

3 XIII.16. hrasvānsvāra-vyatisaṅgavat paro.

4 SS p.379. ardhamātrā tu kapṭhyaśya hy ekāraikārayor
bhavet, okāraukārayor mātrā tayor vivṛta-samvṛtam.

This Śikṣā maintains the second element of ai and not of au to be longer. Another reading by the commentary on Vāj. Prāt. I-73 is "ardhamātrā tu kapṭhyasaikāraukārayor bhavet." according to which the second elements of both ai and au were longer.

5 siddham tvīdutor dīrghavacanāt.

He interprets the "pluta" of i and u as "long", and so according to his opinion the total moras of the pluta diphthongs ai and au would have been three. Nevertheless, according to the view of both of these authors, the second element tended to be longer in Pluti. This suggests, then, the question whether in the actual pronunciation of ai and au the second or the first element was longer, or whether both the elements were equal in quantity. Unfortunately the question can not be decided in the light of evidence from Pāli and Prākṛit, because both ai and au have disappeared from Middle Indian. Interesting light on this point however has been thrown by the Āśvalāyana Śrauta Sūtra.¹ This work prescribes that whenever ^eai and ^eau are pronounced pluta, they should be resolved (provided that they are not praghyā²) into āi, āu, only the first element a should be pronounced pluta, e.g. "dyau was to be resolved into dyaū". And Pāṇini also, after prescribing that the second elements of pluta ai and au are long, states in the next Sūtra that "in calling somebody at a short distance the first element of non-praghyā diphthongs becomes pluta (e.g. dyau was resolved into dyaū)."³ It seems to be curious how the quantity of these elements should have so much varied with different contexts: nevertheless these prescriptions indicate that ^{under certain} ~~in some dialects~~ ^{conditions} of the Sūtra period (circa 500 B.C.) the first element of the diphthongs ai and au being more sonorous was lengthened rather than the second element.

- 1 I-5 vivicya sandhyakparāpām akāraṇa na oet praghyo
vyañjanānto yā. Con. yāny apraghyāpi sandhyakparāpā
tāni vivicyakāraṇa eva plāvayed iti. akāraṇakārayor aś iti
okāraukārayor aś ityevam vivicya plutih kāryā.
- 2 This distinction accords with the origin of the praghyā vowel, the final element of which was originally long.
- 3 VIII-2-107 eco'praghyasyādurādāhūto pūrvasyārdhasyād
uttarasyābhatu.

As regards the various conditions under which the ultra-long vowel occurred, we have few records of it in the Vedic Saṃhitās. Thus, as the Rg. Prāt.¹ points out, pluta occurs only three times in the Rg Veda; in the (white) Yajurveda, it occurs only "seven times, there does not occur an eighth" - according to the statement of the Amoghānandīnī Śikṣā;² in the Atharvaveda, according to Whitney,³ it occurs 15 times; in the Taittirīya Āraṇyaka, according to the Āraṇyaka Śikṣā,⁴ it occurs sixteen times." But it seems highly improbable that pluta was confined only to these orthographical texts; it must have occurred in the living speech many more times than these records indicate.

That Pāṇini had noted the ultra-long vowel as a living phenomenon in the language will be indicated by the following interesting data which we find in his Sūtras:-

- (1) Pluta of the final was used in calling somebody at a distance, as in "Āgaccha Devadattā" "Come Devadatta!"⁵ According to Eastern Grammarians,⁶ however, even a non-final vowel was lengthened in the above circumstances, e.g. Devadāṣṭta! or Deṣvadatta!

This was presumably a dialectical difference due to accent, which may be illustrated by a somewhat similar contrast between Pānjabi and Lāhndi treatment of accented vowels in

1 I-16.

2 "sapta plutā bhavanti hyaṣṭamo na vidyate." verse 47.

3 On Atharv. Prāt. I-105.

4 visvā agniṣa sāvitrām asanneva dvayam dvayam devā ekan nakan sapta sodasāranyake plutān. 80.

5 VIII-2-84. durādhūte ga. That Prākṛit has preserved the pluta in this sense, has been pointed out by Pischel, p. 64.

6 VIII-2-86. guror anṛto 'nantyasyāpyekaikaṣya prācām.

the Vocative. Thus a Pānjabi will call a man, say "Sītāram" as "Sītarāma", while a Lahndi speaker will address him as "Sītarāma", in the former case the vowel ī, in the latter case the vowel ā being comparatively longer.

- (2) Pluta of the final also occurred in reply to a greeting¹ (except from a Sūdra) e.g. in "bho īyasmān edhi Devadatta" "Live long, O Devadatta!" The tone of the pluta was said to be high in this case.

But Kātyāyana² adds the restriction that pluta was not used in reply to a greeting from a woman, a Sūdra or a malicious person." Evidently the person greeted here was a Brahman, and it was the Brahman's pronunciation that has been recorded in this particular case. Yet it seems to be none the less real, alluding to the presumably indifferent tone in which the Brahman replied to greetings from persons of low status.

- (3) In deliberation.³

Many of the examples in the Rgveda and the Atharvaveda texts indicate this sense e.g. "adha vid āsi st, upā ri vid āsi st" "Was it above, or below?"

But here Pāṇini adds the restriction⁴ that in secular speech (bhāṣā) only the first word or phrase had a pluta final; the second word remained without a pluta, e.g. "ahir nu raj jur nu?" "Is it a snake or a rope?"

1 VIII-2-85. pratyabhivāde '(a)sūdre.

2 I bid. asūdrastryasūyakesu.

3 VIII-2-97. vicāryamānām.

4 VIII-2-96. pūrvam tu bhāṣāyām.

This seems to be a suggestive observation, but we have unfortunately no means at present to judge its accuracy.

Does it imply that the Vedic pluta began to fall into gradual disuse in classical Sanskrit? Or does it indicate that the Vedic language in the time of Pāṇini had become more formal, and its speakers, in academic speech, used the pluta more strictly than they did it in actual speech? Nevertheless these data indicate that they were not fanciful speculations, but based on considerable observation.

Quantity of consonants.

The quantity of a consonant, according to the majority of our Grammarians,¹ was half a mora; but according to the Atharv. Prāt.² it was one mora, while in the opinion of the Pkṣtantra Vyākaraṇa it was "either a mora or $\frac{1}{2}$ mora."³ It may appear curious to the modern phonetician why the ancients attributed to the consonant a quantity decidedly shorter than they assigned to a short vowel, while the Kymograph generally shows the majority of consonants to be often as long as the short vowel, and frequently even longer. But it seems that the viewpoint of the ancients was different. They seem to have identified the duration of the consonant with the moment of actual audition, and neglected, for practical purposes, the on-glide and partly the contact stage of a plosive consonant for the measurement of its quantity. Moreover, vowels as a rule being continuous sounds, tend to take more time than plosive or flapped consonants. If, however, it was only a difference of view-point, the opinion of the Atharv. Prāt. seems to tally more with the modern scientific view.

1 Rg Prāt. I-16, Taitt. Prāt. I-37, Vāj. Prāt. I-69.

2 I-60.

3. II-88. mātrārddhamātrā vā bhavati vyañjanam ityachikārah.

The quantity of a consonant when followed by another according to the Vyāsa Sīkṣā¹, was shorter, viz. $\frac{1}{2}$ mora. This observation was very probably accurate, for other things being equal, the quantum of energy is more likely to be distributed in the articulation of two consonants than of a single consonant, - a fact which is likely to affect the quantity of the consonant concerned. Moreover, the great phonological fact of Abhinidhāna (incomplete articulation) in Indian languages seems to further confirm the accuracy of the observation.

The manuscript work the Sarvasammata Sīkṣā² is of opinion that the quantity of a consonant without a vowel is $\frac{1}{2}$ mora, but when pronounced with a vowel, it is $\frac{3}{4}$ mora. The reason why a consonant was generally measured as $\frac{1}{2}$ mora, was said to be "due to its frequent connection with a vowel." According to the author, then, the additional $\frac{1}{4}$ mora attributed to the consonant really belonged to the succeeding or the preceding vowel connected with it. There seems to be an element of truth in the author's observation, for as Roudet³ has pointed out, when a consonant is followed by a vowel, there is a very short

- 1 XXVII-4. halyuktaṃ haluttaraṃ tad apamātraṃ prakīrtitaṃ.
com. vyāñjanaparaṃ vyāñjanayuktaṃ vyāñjanap pādamātraṃ
prayujyate, yathā visvaphaniyā, halyuktaṃ iti kim, yat tat na.
- 2 94. asvaraṃ vyāñjanam nityam apamātraṃ prayujyate, sapsar-
gācceti bāhulyān mātṛā vṛddhaiḥ prakīrtitā.
com. nanv apamātram ityuktaṃ hrasvārdhakālaṃ vyāñjanam
ityuktatvād iti cet, satyam, tad autsargikam, mātṛāvṛddhiḥ
sansargād iti bāhulyāt prācuryeṇa vṛddhaiḥ prakīrtitā.
- 3 Eléments de Phonétique Générale, p.231.

duration (2 to 3 hundredths of a second) of articulating movement which is common to both, and which Roudet is inclined to attribute to the vowel. If this is true, the quantity of a consonant is really shorter than it appears to be, and the author's quarter-mora is only a symbolic way of representing this fact. Moreover his opinion seems to be consistent with the general viewpoint of Indian grammarians as indicated above, which identified the quantity of a consonant with the duration of actual audition. The quantity of a fricative, according to the Pāṇiniya Śikṣā,¹ was equal to that of a long vowel. This observation was, on the whole, sound, for fricatives, being continuants, often tend to take longer time than other consonants.

The lengthening of certain consonants after the Svarita accent, mentioned by the Vaidikābharapa, has been already pointed out, see pages 276-78.

Many more details regarding the quantity of consonants have been given by the Vaidikābharapa and a few Śikṣās, which presumably refer to pronunciation of individuals or isolated areas, and the accuracy of which we have no means to judge, in this age. For instance, the Vaidikābharapa quotes a Śikṣā² according to which "a consonant after a long vowel is a quarter-mora shorter than after a short vowel." This can not be accepted as a necessary truth, and must vary with several additional circumstances, e.g. stress, quantity of adjacent sounds, and the phonetic tendencies of a particular speaking area. But other things being equal, this compensatory shortening was no doubt

1 SS p. 55. Yathā saṅkhyā^m tu dīrghasya tathā cogmā prakīrtitā ūgmā dīrghaṇ samatvaṇ ca kṣipraṇ kuryāt tadardhakan.

2 On Taitt. Prāt. I-37. dīrghapluṭābhyāṇ paraṇya vyañjanaṇya svarāparaṇya pādaṇātravaṇ uktam.

possible, as may be indicated by the simplification of double consonants after long vowels in the living dialects. Again, the quantity of a nasal consonant, according to the manuscript work the Āpīṇī Śikṣā,¹ "after a short vowel was equal to that of a long vowel, viz. two moras." Observations like this evidently refer to some dialect which it is now difficult to trace ~~now~~ Quantity of the "pause".

The third section on the rules of quantity, according to the Kālanirṇaya Śikṣā, was related to the "pause." Indian works on phonetics have given very minute and exhaustive details on the quantity of the "pause," but it is difficult to determine what they really meant by the term, and so it is impossible to examine these details. The commentary on the Vyāsa Śikṣā² defines it (virāma) as a "time of silence"! But the definition becomes obscure when it is applied to the actual phenomena mentioned by our Grammarians.

The most important of these phenomena was said to be the hiatus. Thus the quantity of the hiatus in vā iya, when a long vowel was followed by a short vowel, was said to be one mora (according to the Pāṇi Śikṣāṭīkā³) or $\frac{1}{2}$ mora (according to Uvata).⁴ This "interval of silence" between one sound and another, if strictly taken, was inconsistent with the Indian theory of the continuity of sounds as discussed above. Nor are there any

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- 1 16. dvimātra uttano hrasvād adhyardho vyājanāntarah
dīrghād anantarastadvan mātriko vyājanāntarah.
 - 2 XXVII-5. virāma varṇayor madhye hyapukālo'pasaṃyute
con. "virāmah tūṇībhūtah kālah ayāt."
 - 3 135. hrasvottarā yatra tu dīrghapūrvā vatsānucāripī
saikamātrā.

⁴ On Rg Prāt. II-1.

positive grounds for the supposition that the hiatus was accompanied by a glotted ^{al} stop, for it has not been mentioned by Indian Grammarians, and no such tendency has been so far discovered in modern Indian languages. By "pause", then, Indian Grammarians, to be consistent with their view of the continuity of sounds, possibly meant a "glide" between one sound and another, and this seems to be confirmed by the Rg Prāt., which attributes only a very infinitesimal time, a $\frac{1}{2}$ mora (time of a Svarabhakti) to the hiatus. The quantity of the "pause" was said to be longer between long vowels than between short vowels; thus the "pause" in tā in was longer than that in prā ṛbhūbhyah,² perhaps because in the former case the quantum of energy was more diffused. Again, the "pause" between long vowels of different quality was said to be longer than that between long vowels of the same quality, e.g. it was longer in etā evā than in vā āranyam,³ probably because in the former case a change in the position of the articulating organs requires more time.

Again, according to the Rktaṇtra-Vyākaraṇa⁴ and the Vyāsa Śikṣā,⁵ the "pause" between two individual sounds in general had a duration of $\frac{1}{2}$ mora, except in a consonant-group, where there

1 On Rg Prāt. II-1. akato dīrghah, ardhamātrākālāḥ. nū ittas
te sū na ayve.

2 Uvāṇa on Rg Prāt. II-1. ubhayato dīrghā pādonamātrākālā
tānnyarddheti.

3 Pārisīkṣāṭikā. syātān vivrtter api yatra yasyāḥ, ādyantayor
cāpy asavarpadīrghau, madhye visargo yadi vāpi nā vā
vaisēpikā mātṛikakālayuktā. 139.
.....
savarnabhūtāv api tau bhavetaṁ sū pādanātrā ca pipīlikā syāt.
141.

4 II-34. varpāntarāṇ paramāṇu.

5 virāmo varṇayor madhye 'mukalo'py asanyute.

was said to be no "pause". The commentary on the *Kālanirṇaya Siksā*,¹ however, rightly combats this view, and says that "if there were a "pause" between a consonant and a vowel, then the quantity of the vowel in *tat* would become ultra-long (*pīṭa*), but this is never so perceived." It seems, then, that the "pause" indicated a glide the length of which was over-estimated by some authorities, and kept within more reasonable limits by others.

Quantity of the Anusvāra.

Besides the "three sections" on the rules of Quantity, there is another item on which our Grammarians give exhaustive details, viz. the quantity of the Anusvāra. The details, however, are of a very minute and subtle character, and probably refer to the pronunciation of individuals or isolated areas. We have therefore no means at present to judge their accuracy. For instance, the *Sikṣas* assert that the Anusvāra was "long after a short vowel, but short after a long vowel. Thus it was long after *haṁsa-*, but short after *māṁsa-*."² The *Taitt. Prāt.*,³ however, speaks of the Anusvāra as being only "short." The question, then, referred to the length of nasal consonants according as they followed a short or a long vowel, and this must have varied with different dialects. For example, *Lahndi* seems to confirm the observation of the *Sikṣas*, for corresponding to Sanskrit long vowel - Anusvāra we have in *Lahndi* and *Pānjabi* sometimes the long vowel without the Anusvāra, e.g. *Skr māṁsa-* but *Lahndi māṅ*. But after a short vowel *Lahndi* has preserved the nasal, cf. Sanskrit *daṁsa-*, *Lahndi daṅg*, Sanskrit *vaṁsa-*, *Lahndi vaṅjh*. Also cf. *Sināḥ nos*, *Nepālī nās* (= *māṁsa*), *Hindī kosu* for *Skr. kainsuka-*.

1 yadi svaravyañjanayor madhye'pi virāṇaḥ syāt, tadā tad iti padam plutena samakālam avagamyeta, na cāvagamyate. On verse 25.

2 Laghunāṇḍyandīnī Siksā 88 p. 115:- hrasvāt paro bhaved dīrgho haṁsa iti nidarśanam, dīrghāt paro bhaved dhraśvo māṁsaḥ bya iti darśanam.

3 I-54.

CONCLUSION.

Our study of Indian Grammarians has thus established the following points:-

(1) The reality of the observations. India has been called a land of dreams and subtleties. But the above study gives us at least one exception, viz., the phonetic observations of Indian Grammarians. The chapters on quantity and doubling have particularly proved the accuracy of the observations and the actuality of the data offered. But what is even more striking is the importance of the facts discovered by them. Abhinidhāna for instance, which was largely responsible for the profound changes in the consonant system of Primitive Indo-Aryan, was observed to the minutest details.

(2) A basis for Indo-Aryan linguistics. The entire system of philologists is sometimes called into question, because the philologist bases his conclusions on the transcriptions of ancient scribes which may have been phonetically wrong. But so far as Indo-Aryan linguistics is concerned, it has inherited a firmer basis from the exhaustive phonetic descriptions of Indian Grammarians. The Indian philologist will therefore find a basis and a defence for his system in the above study. It will make Indian linguistics a firmly-based synthesis.

(3) A help for the solution of several points. It will now be realized that our study has not a mere antiquarian interest, but has considerable value for the solution of several modern linguistic problems. Some

of these, e.g., the short quantity of Anusvara after a long vowel, have been noted on pp.32-33, and it may be hoped that the reader will find in this study several more solutions of similar problems.

4. A stimulus for further research. There are several interesting points mentioned by the Śikṣā, which, although not borne out by the evidence we possess at present, may have actually occurred in some dialects. For instance the remarks of the Śikṣā on the doubling of s and h (pp.190-3) and on Svarabhakti as an independent syllable after Svarita (pp.141 ff), may stimulate the exploration of hitherto unknown dialects and thus lead to the "Ergänzung" of India's greatest contribution to antiquity.